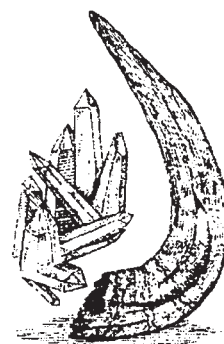


Applied BIODYNAMICS®



Fall/Winter 2014–15

Newsletter of the Josephine Porter Institute • Floyd, Virginia

Issue No. 86

Ehrenfried Pfeiffer: Enlivening the Soil for Health

Abigail Porter

Fertile, living soil is the basis for the health, vitality and the consciousness of plants, animals and humans. Ehrenfried Pfeiffer dedicated his life to the revitalization of the soil and plants through the use of the biodynamic remedies described by Rudolf Steiner in the 1924 series of lectures now known as the *Agriculture Course*. Illness in plants and animals caused by sick, depleted soils was already evident in the early 1900s. When Pfeiffer asked Steiner why it was that people on a spiritual path were not making progress and why Steiner's recommendations were not being implemented, Steiner replied that the food no longer contained the nutrition and the forces required for spiritual growth. In another lecture, Steiner noted that people of that time had become like automatons, mindlessly repeating what they were told or what was the common opinion around them, implying that they lacked critical thinking and discernment. On other occasions, he said that man's technological ability had surpassed his moral development needed to use it wisely. So, when Steiner said, "The most important thing is to make the benefits of our agricultural preparations available to the largest possible areas over the entire earth, so that the earth may be healed and the nutritive quality of its produce improved in every respect,"¹ Pfeiffer took it to heart.

When Pfeiffer first started to advise farmers on this continent in the 1930s, he recommended that every farmer should make his own preparations. However, after seeing the poor quality that was being made, he changed his mind and advised that only experts should be making them to insure their effectiveness. Pfeiffer had credibility as a biochemist, soil scientist and researcher, and demand for his presentations on sustainable agriculture and soils at the Natural Food and Farming Associates conferences and agricultural institutions grew. As he met more of the public



Ehrenfried Pfeiffer

and began consulting for a growing number of large-scale farms and commercial composting operations, it became apparent that there was resistance to the use of the preparations partly because of the esoteric or "woo woo" factor in how the preparations were made and partly because of the extra work and expense in applying all of the preparations. One has to remember that during this time period organic was considered very fringe and was denigrated by many in both the scientific community and in the general public. So, biodynamics and the processes that were involved were

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From the Editor

Dear Friends of JPI,

This newsletter comes with all of our best wishes for a happy and prosperous New Year, and, once again, regret for the tardiness of our current issue. It has been a very busy year at JPI, with several improvements having been made on the JPI farm, including construction of a new root cellar and a new roof on the barn, two very successful JPI workshops, one in spring and one in fall, and JPI participation in six conferences nationally. We were particularly inspired by activity at our booth at the national conference of the Biodynamic Association (BDA) in Louisville, KY this past November. Congratulations go to the BDA for organizing a first-rate event that featured leading agricultural speakers, cutting edge topics, incredible networking and memorable social, culinary and artistic interludes. A highlight of the conference was the honoring of Hugh Courtney for his monumental contribution to biodynamics at a concluding award ceremony. Lloyd Nelson's introduction of Hugh was followed by a heartfelt personal tribute by JPI board president, Pat Frazier, which was appreciated by all there. All in all, it is rewarding to see biodynamics' audience and reach expand.

Somewhat widening our focus on the preparations in the overall work of biodynamics, we have decided to concentrate

this issue on two of our products also used to support a healthy biodynamic regimen: the Pfeiffer biodynamic compost starter and the field and garden spray. Developed by a pioneer and leading proponent of biodynamics historically, Ehrenfried Pfeiffer, the compost starter and the field spray have been used for decades with incredible success to enhance the composting process and to increase the micro-life and humus formation in soils. Co-editor Abby Porter takes a look at some their uses and I was fascinated to learn more about the remarkable man behind the products in the brief biography included herein. In looking through articles on Dr. Pfeiffer, I was humored by this testament to his warmth and wit: "The powers that be have said we are faddists. The definition of a faddist is 'one who tries first one thing and then another.' Now these so-called powers that be in the agricultural field originally recommended one treatment. That was tried and proven unsuccessful so they recommended another. That proved too dangerous, so they brought still a third: And all the time we have been steadily working on our original method. Just who, exactly, are the real faddists?!" It's remarkable to think biodynamics is nearing its hundredth birthday in the context of such huge changes in agriculture over the past century!

Please note, we will be changing our newsletter format slightly in 2015 and will go from quarterly to semi-annual publication (as described in the announcement on page 18). Slight changes have been made to our associative contracts, also explained below. Don't forget to renew your contract early to take advantage of the discount!

With thanks for your support and wishing you health and abundance in 2015,

Hunter Francis

1) <http://www.rotheraine.com/pfeiffer.html>

Applied Biodynamics

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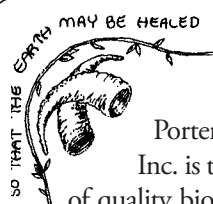
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Mission

The mission of the Josephine Porter Institute for Applied Biodynamics, Inc. is to heal the earth through production of quality biodynamic preparations based on the spiritual scientific discoveries of Rudolf Steiner and to advance education and research in biodynamic agriculture.

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Letter from the JPI President

Dear Biodynamic Friends,

Greetings from Josephine Porter Institute for Applied Biodynamics (JPI). We sincerely hope this letter finds you and yours well as we begin the New Year. We have much to be thankful for as we reflect on this past year.

News from the Farm

Providing proper storage for the biodynamic (BD) preparations is a commitment we take very seriously. This spring, we carefully excavated into the north-facing hillside leading to the production facility to build the brand new 200 square foot root cellar. We had determined a very natural opening in the forest hillside to receive the cellar and, consequently, minimal disturbance to the surrounding trees resulted in a very natural and appropriate structure. Handcrafted hemlock boxes in several sizes house all the preparations in appropriate separation from one another, and in a space that is easily accessible to both our staff and the public. Natural ventilation and light from the entrance vestibule allowed the design to eliminate the need for any outside electricity, protecting the preparations from those influences. The cellar provides an opportunity to educate during our workshops about proper preparation storage. The final dimensions are large enough to accommodate the growing demand for high quality biodynamic preparations. We feel the cellar is a perfect reflection of our roots in our new home.

As the designated non-profit for the continuance of Ehrenfried Pfeiffer's work in the form of the Pfeiffer BD Compost Starter and Pfeiffer BD Field and Garden Spray, we have special manufacturing needs to continue production of those products. Over the past year, we have been slowly accumulating the needed equipment to re-equip our



Our new 200-square-foot root cellar

laboratory and replace production machinery. Without a lapse in production during our first year, we have successfully resumed full production of the Pfeiffer products and are continuing to improve our laboratory facility housed within our 4,000 square foot barn/production building.

Our commitment to education on the making and use of the preparations necessitates a classroom facility to demonstrate these skills during our spring and fall workshops. This past year, we created a simple classroom and successfully educated another fifty-plus students in the valuable skills of making and using the BD preparations. Again, we are very grateful for our on-going relationship with the Brett family. The use of their house as a staging area for our meals and some of our lectures was invaluable to the success of our workshops this past year. These infrastructure changes have been carefully targeted as support for the home we are creating for the BD preparations and the educational needs of future preparation makers throughout the North American continent and beyond.

The expertise of good teachers makes education happen. We give new thanks to the addition of Joey Brinkley, an accomplished biodynamic preparation maker, to our board. Joey rounds out an already accomplished team of educators on the board and our employees on the ground. Together we have a combined seventy-plus years of experience in the work of the preparations to share with prospective students and the biodynamic community.

JPI Outreach and Education in 2014

JPI has maintained a dedicated commitment to biodynamic education throughout this past year.

JANUARY

- Sponsorship of Biodynamic Association (BDA) pre-

Biodynamic Preparations Legend

BD #500 – Horn Manure

BD #501 – Horn Silica

BD #502 – Yarrow

BD #503 – Chamomile

BD #504 – Stinging Nettle

BD #505 – Oak Bark

BD #506 – Dandelion

BD #507 – Valerian

} Compost
Preparations

BD #508 – Horsetail (*Equisetum arvense*)

LETTER FROM THE JPI PRESIDENT

conference event at EcoFarm Conference in California.
Shared educational booth with BDA

- Texas Organic Farmers and Gardeners Association. Biodynamic presentation and educational booth

APRIL

- Educational booth at Mother Earth News Fair, Asheville, NC

MAY

- Spring Biodynamic Preparation Making Workshop at JPI

SEPTEMBER

- Educational booth at Mother Earth News Fair, Seven Springs, PA

NOVEMBER

- Fall Biodynamic Preparation Making Workshop at JPI
- Support, planning and facilitation of the Fellowship of Preparation Makers Conference in Crestwood, KY at Foxhollow Farm
- Sponsorship, planning, faculty and educational booth space at National Biodynamic Association Conference in Louisville, KY

DECEMBER

- Educational booth at Acres USA Conference, Columbus, Ohio

THROUGHOUT THE YEAR

- Publication of our quarterly newsletter and publication in *LILIPOH* magazine and the Biodynamic Association magazine, *Biodynamics*

Unity among the major biodynamic organizations in the country is a value we hold. We have been actively pursuing opportunities to increase mutually supportive relationships between JPI and the Biodynamic Association, and other biodynamic groups and organizations. Look for more of this to manifest in the coming year.



Stuffing cow horns for BD#500 at the fall 20014 preparation-making workshop



A well-stuffed dandelion pillow from the fall 2014 preparation-making workshop

We need your help!

In the coming year, we hope to:

- Secure the purchase of our new home and proceed with those arrangements;
- Pursue a whole facility design plan to support our educational, research and laboratory needs;
- Seek and hire a biodynamic farmer and preparation maker to support our operations at the farm.

Please help us reach these attainable goals by your tax-deductible donation.

Support our continued mission of healing the earth through the making, distribution and education about the biodynamic preparations. The availability of these high quality BD preparations is crucial to the health of regenerative agriculture methods “so that the earth may be healed.”

Tax-deductible donations may be made through the JPI website www.jpibiodynamics.org or by check mailed to JPI, 201 East Main St. Suite 14, Floyd, VA 24091, or by telephoning the office at (540)745-7030. You may earmark your donation to any of the requests above, or another category of your choosing. Your overwhelming support this past year warms our hearts and gives us strength. Thank you for your continued generosity.

Peace and Grace,
Pat Frazier

Board President
Josephine Porter Institute for Applied Bio-Dynamics, Inc.

continued from page 1

Ehrenfried Pfeiffer: Enlivening the Soil for Health

especially beyond most people's understanding. This was so much so that it was no wonder that J.I. Rodale distanced himself from biodynamics knowing that academic and scientific interest and funding would not be forthcoming if the organic movement he was trying to promote was associated with biodynamics. In order to reach the wider world outside of the biodynamic and anthroposophic community, Pfeiffer saw that biodynamics would have to be presented in a scientific way that was accessible by what they were familiar with. Steiner too foresaw this necessity as he had earlier advised Pfeiffer to concentrate his studies at the university on chemistry and life sciences. In order to overcome these obstacles to making "the benefits of our agricultural preparations available to the largest possible areas over the entire earth," Pfeiffer began researching for a solution.

In the 1940s, Ehrenfried Pfeiffer developed the compost starter as a way to efficiently and scientifically increase the use of the preparations. The compost starter was modified to be used as a field spray to speed up the breakdown of cover crops and field stubble and to stimulate humus formation in the soil. As scientifically based bacterial inoculants, they were readily accepted. Both products contain all of the biodynamic compost preparations and the BD #500 (horn manure) as well as a concentrated mixture of cultivated beneficial soil bacteria, enzymes, fungi and plant growth hormones to increase their effectiveness. The ratio of the microorganisms is different depending on whether the intended use is for compost or if it is for field application. During production, the products are rhythmically potentized, eliminating the need for stirring when they are applied. The finished products are dehydrated, putting the activity of the microorganisms into suspension, which allows them to have a shelf life of a year or more providing they are stored in a dark, cool, dry place away from electrical fields. These two, easy-to-use compound preparations became known as the Pfeiffer BD Compost Starter and the Pfeiffer BD Field Spray (now the Pfeiffer BD Field and Garden Spray).

Pfeiffer continued consulting and conducted important research from the 1930s until the time of his death in 1961. He testified in court during a class action suit brought against the federal government for spraying DDT over biodynamic and organic farms on Long Island, New York. Biodynamic farmer Marjory Spock initiated the suit, and Pfeiffer's research and testimony provided substantial material for Rachel Carson's seminal book, *Silent Spring*. Chicken farms where Pfeiffer consulted used the compost

starter in the large chicken houses. After it was sprayed over the bedding and manure, it was rototilled in providing a bedding of beneficial bacteria and reduced odors, resulting in a working compost beneath the chickens, thus reducing pathogens. A highlight of his work that gave him more national and international recognition was the municipal composting project in Oakland, California in the early 1950s. Unfortunately, the plant burned down bringing an end to the project. It was thought that it was too much of a threat to the commercial fertilizer industry even though Pfeiffer made efforts not to confront them by suggesting that the two systems could work together. There were plans to compost New York City's garbage and a pilot project was planned to be located on Long Island but it did not materialize. Internationally, where vested interests didn't have as much influence, composting and farming applications of biodynamics grew. After Pfeiffer's death, the momentum created by Pfeiffer waned as there was no one who could adequately fill his shoes and relate to both the scientific community and conventional farmers. Since then, the wine industry has brought renewed commercial attention to biodynamics with biodynamic wines winning top awards internationally. Now as more people are awakening to the destruction of the earth, our food supply and our health, people are becoming more conscious of the connection between healthy, living soil and human health and the interest in biodynamics is growing as a truly sustainable system of agriculture.

With more communities setting zero-waste as a goal, and compostable garbage being collected separately, it seemed timely to reprint an account of the first city in the world to convert municipal garbage into valuable compost. The pilot project, using the biodynamic compost starter developed by Ehrenfried Pfeiffer is described in "The City With Golden Garbage" from the May 31, 1952 issue of *Collier's* magazine, reprinted beginning on page 7 of this issue.

Notes:

- 1) Rudolf Steiner, as quoted by E. Pfeiffer in the preface to *Agriculture Course* (Adams translation), p.7

References:

- Pfeiffer, Ehrenfried, *A Modern Quest for the Spirit*, Mercury Press, 2010.
Steiner, Rudolf, *Agriculture Course*, (Adams translation) Rudolf Steiner Press, 2004.

Ehrenfried Pfeiffer: A Brief Biography

Hunter Francis

Dr. Ehrenfried Pfeiffer stands out in the history of biodynamics. Present at its beginning and someone whom Rudolf Steiner mentored personally, Dr. Pfeiffer became a tireless advocate for its implementation and spread across Europe, America and as far away as Australia. Born in Munich, Germany in 1899, Dr. Pfeiffer first met Rudolf Steiner at the age of nineteen and was encouraged by Dr. Steiner to pursue a rigorous education in the sciences. He graduated with honors from the University of Basel. Later, at Dornach, Switzerland, Pfeiffer immersed himself in anthroposophical activities and was first shown how to make the biodynamic preparations by Steiner in 1923, a year before they were explained in the 1924 *Agriculture Course*. In that series of lectures, Dr. Steiner encouraged listeners to study, practice and develop the biodynamic method given. Dr. Pfeiffer transformed the inspiration he received from Rudolf Steiner into his life's work.

Following his work in Switzerland, Dr. Pfeiffer became managing director of an 800 acre experimental farm called Loverendale, in Domburg, Holland. This farm was set up for the purpose of carrying out agricultural trials in biodynamics in collaboration with the Natural Science Section of the Goetheanum (at Dornach). Given the challenges of the inter-war period in Europe, it was a feat in itself to convert the conventional farm to a self-sufficient, biodynamic enterprise. Yet, at the same time, Pfeiffer took on the role of a teacher and consultant, travelling across Europe and to America to share his knowledge. He first came to the United States in 1933 to lecture on biodynamic farming, among other topics, at the first Anthroposophical Summer School at Threefold Farm in Spring Valley, N.Y. In 1939, Pfeiffer ran Britain's first biodynamic conference, interestingly, at the estate of Lord Northbourne, who is credited with coining the term 'organic' in his 1940 book, *Look to the Land*.

Through several visits to America, Dr. Pfeiffer became an important contributor to the development of biodynamic agriculture here. In 1940, he immigrated to the U.S. with his wife and two children, and helped to establish the Biodynamic Farming and Gardening Association. They settled in Kimberton, Pennsylvania, where Pfeiffer was invited to create a model biodynamic farm and training program. It was at Kimberton that Pfeiffer met J. I. Rodale, a pioneer of the American organic movement, hence another interesting connection in the history of biodynamics and organics. Importantly, Dr. Pfeiffer was interested in the connections between soil, plant and human health and nutri-

tion, something which became a theme common to both movements early on.

It has been reported that an observation Dr. Pfeiffer had as a student led him to develop an analytical method using crystallization as a technique for detecting cancer. He noticed that frost patterns on different windows that he passed in the Swiss winter streets varied from shop to shop. Eventually, he created two revolutionary, image-forming processes that evidence the presence of life-forces, or etheric formative forces, in samples being tested. One method uses round filter chromatography to show differences in patterning of a solution through capillary action. The other involves drying a solution mixed with copper chloride to produce characteristic crystals on a glass plate. Both are used for qualitative diagnosis. The latter is known as the sensitive crystallization process and has since been used in a wide array of applications, to test everything from soil solutions to food and wine. The procedure was employed with great success at the Hahnemann Medical College in Philadelphia to detect cancer using blood samples, eventually earning him an honorary Doctor of Medicine (M.D.) degree from that institution in 1939.

After his work at Kimberton, Pfeiffer bought a farm in Chester, New York, where a small community formed focused on farming, education and the administration of the Biodynamic Association. Starting in 1946, he directed and conducted research at the Biochemical Research Laboratory in Spring Valley, New York, where his research focused on soils, compost, plant materials, and the biodynamic preparations, including their use in large-scale farming and commercial composting operations. He also conducted extensive research on the preparation and use of biodynamic compost and made significant contributions to the field of composting in general. In the 1940s, Pfeiffer brought to market a biodynamic compost starter, an inoculant described in this newsletter that helped make biodynamics accessible to a wide audience. Thanks to his deep knowledge of microbiology and his success with composting, Pfeiffer later served as a compost consultant to municipal compost facilities globally. Most notable among these was a pilot food waste composting program in Oakland, California between 1950 and 1952. In this too, Pfeiffer was years ahead of his time, as municipal food waste composting has only recently been implemented on an on-going basis in select areas of the U.S.

Pfeiffer wrote several books. The most influential, *Biodynamic Farming and Gardening*, was published in 1938 simultaneously in five languages and was the first popular

account of biodynamic agriculture. In it, he presented the practical results of more than a decade of farming practice and experimentation. His 1947 book, *The Earth's Face and Human Destiny*, published by Rodale Press, explores our intimate connection with the land. It is also interesting to note that his writings detailing the dangers of DDT, and his lobbying against its indiscriminate use, became a source of inspiration for Rachel Carson's book, *Silent Spring*, which was instrumental in launching the modern environmental movement.

Dr. Pfeiffer died at his home in Spring Valley, N.Y. in

1961 from a series of heart attacks. In fact, he struggled with health challenges throughout his life, including tuberculosis in the 1940s, making his achievement in the advancement of biodynamics all the more remarkable. His dedication and contribution to agriculture and many fields of science were exemplary.

References:

www.en.wikipedia.org/wiki/Ehrenfried_Pfeiffer

www.pfeiffercenter.org/about_us/ehrenfried_pfeiffer.aspx

www.rotheraine.com/pfeiffer.html

The City with Golden Garbage

A.W. Martinez

The following article originally appeared in the May 31, 1952 issue of Collier's magazine.

One morning in October 1950, two strangers walked into the office of Tony Dalcino, president of the Oakland Scavenger Company, with a proposition that turned Dalcino's casual smile into a look of utter disbelief.

His callers wanted to know whether the company would let them have part of the daily haul of garbage it collects from the city of Oakland, California. They hoped, they said, to put the garbage on an assembly line and sell it!

Garbage was one thing Dalcino had plenty of. His company picks up about 400 tons a day from Oakland, and he was sitting right in the middle of it, so to speak, for his plant is built on a peninsula of garbage fill that yearly bites deeper into San Francisco Bay, eight miles from the city.

That his lowly stock in trade could achieve any more useful end than in the shallow waters of the bay was a thought which fascinated Dalcino but left him understandably skeptical. With notable restraint, he asked to hear more.

The two visitors were a combination nearly as strange as the idea they were proposing. One of them was Richard Stovroff, young owner of a wastepaper business in Buffalo, New York. The other was Dr. Ehrenfried E. Pfeiffer, German-born biochemist, holder of an honorary U.S. medical degree, and lifelong experimenter with new ways to grow better food.

Pfeiffer, a tall, robust, pink-cheeked man with an infectious twinkle, explained. In the course of his researches he had discovered a new "race" of bacteria which could convert garbage into fertilizer, a sweet-smelling black earth which could perform virtual miracles for the land. A tablespoon of the bacteria, grown in test tubes, could turn a ton of garbage into rich humus in three weeks.

Pfeiffer told Dalcino: "It costs Americans, as taxpayers, a few billion dollars a year when we throw away as garbage the precious minerals and organic material which we take out of the soil in the form of food. On the other hand, it costs farmers nearly \$7,000,000,000 a year to put some of these minerals back in the ground in the form of chemical fertilizers. That doesn't make sense." He had, he added, decided to do something about it ever since his arrival in the U.S. in 1940 as a refugee from war-ravaged Europe.

Today, as a result of Pfeiffer's exposition nearly two years ago, nobody in Oakland, least of all the Oakland Scavengers, finds anything odd in the business of converting garbage. On the edge of San Francisco Bay, in a small, slate-gray building which serves as pilot plant for the Pfeiffer project, as many as 100 tons of wilted refuse a day are fed into one end of a system of conveyer belts. It comes out the other end as compost, ready, after a brief layover, to be shipped to farms and nurseries all over the nation.

Already, this spring, home gardeners in the West have had a chance to conduct their own tests on it; the Ferry-Morse Seed Company has distributed it and is using it to cultivate its own prize grass and flower seeds in Salinas, California.

In addition, many of the fresh vegetables now on your dinner table, from the Salinas Valley "Salad Bowl" owe an extra charge of vitamins and minerals to this onetime Oakland garbage. A doubting foreman of one of the big Salinas farms which use the compost took a bag of it home recently, dumped it on his lawn and forgot about it. Weeks after the summer drought began, his neighbors became curious; his was the only lawn in town whose grass was still lush and green.

In control tests at Pfeiffer's Biochemical Research Laboratory at Spring Valley, New York, vegetables grown in

this converted garbage have weighed 25 per cent more than those grown in conventional fertilizers, with from one to three times more vitamin A. The garbage-compost-treated soil has shown from one to four times as much life-giving nitrogen, and grain grown in it has shown a consistently higher protein content.

Laboratory experiments have proved that the mixture can restore even sterile sand to vigorous fertility and could make rich farmland out of desert if adequate water were available.

What the converted garbage does to the soil is to restore its organic matter, mineral balance and structure; it gives the soil body, and permits it to absorb and hold water. In the soil, this organic matter releases a powerful concentration of bacteria whose digestive activities and decay create plant foods and soil-binding humus, release nitrogen and make more efficient use of chemical fertilizers.

Chemical Fertilizers Less Efficient

Chemical fertilizers return plant food directly to the soil but do not provide this vital organic soil structure (although the new chemical, Krilium, by making the soil more porous, will increase the efficiency of organic fertilizers). All farmers try to restore it in part by growing cover crops and plowing them under, or by turning under plant stubble.

The converted-garbage fertilizer is actually a scientifically produced supercompost, a little like the material conscientious gardeners make by piling up leaves, vegetable matter and manure and allowing them to age. Such composting takes six to nine months and a great deal of care, but farmers regard the resulting product as "black gold." It is the stuff that gives virgin soil its loamy, crumbly appearance.

However, compost is a luxury fertilizer. You can't buy it in commercial quantities or at prices practical for mass-production farming. Neither can the mass-production farmer make it. At today's pace, he has neither the time nor manpower. He also lacks the materials, the ready supply of manure and vegetable matter which diversified farms once had.

The Oakland plant hopes to provide the answer to this nation-wide need for a cheap supply of natural organic matter. The gradual depletion of our soil's organic reserves, and the attempt to make up for it solely by increasing the use of chemicals, has long worried agriculturists. Without any organic matter to anchor the topsoil, farmlands can become dust bowls.

"No one plant can do this job," Pfeiffer points out, "but if all U.S. garbage were processed each year, we would have about 30,000,000 tons of compost, enough to fertilize 10,000,000 acres of land. And garbage dumps would just about disappear."

He sees the Oakland project as a showcase, not only for farmers, but also for cities for the problem of garbage disposal. The Oakland compost now costs \$34 a ton, but Pfeiffer expects even this price, comparable to conventional fertilizer costs, to go down as production expands. Since January the plant has been converting 100 to 125 tons of garbage a day, and expects to produce a minimum 60,000 tons of compost during the coming year.

Oakland, meanwhile, likes the showcase idea and is intrigued by its curious distinction as the first city in the world to turn garbage into a useful commercial product.

Tribune "Points with Pride"

"Oakland, let us announce with pride, is the Compost City of America," the Oakland Tribune recently boasted. The paper went on to chide San Francisco for not getting a compost plant, too. "... California does have its backward cities," it commented. Walter F. Gibson, head of Oakland's sanitation department, has called the plant "a boon to any municipality, as it disposes of the garbage problem. It is economically sound be operated in any area."

No such rosy optimism existed in the fall of 1950, when the plant began operations under the resounding name of Compost Corporation of America. Seven stockholders mainly paper processors who saw a promise of a new supply from the garbage — were persuaded to spend a total \$150,000 to start the company, which is known in Oakland as Comco. Richard Stovroff, the Buffalo businessman, was named president. Stock on hand included an unlimited supply of garbage and several test tubes filled with hungry bacteria.

For 30 years, Oakland's garbage has been collected under contract with the city by the Scavengers, 250 Italian-Americans who function as a co-operative, sharing titles, profits and labor equally. The friendly if skeptical Scavengers turned over to Comco some of their 30 garbage-built acres for a plant; they offered the garbage for nothing.

Young Dick Stovroff was skeptical himself, but the prospect of getting a profitable supply of wastepaper from the conveyer belt handling of rubbish convinced him. As it turned out, that paper amounted to only about one per cent of the plant's \$50,000 income last year.

Pfeiffer's arrival at Oakland's garbage dumps came about by way of the widest possible detour — one which included several European countries and a period on what seemed at the time to be his deathbed.

Born in Munich fifty-three years ago, Pfeiffer as a boy emigrated with his parents to Switzerland, where he became a naturalized citizen. He graduated with honors from the University of Basel and was on his way to a doctorate when a significant event occurred. Strolling on the streets

of Basel one winter day he noticed that the frost patterns on windowpanes differed from shop to shop.

What eventually developed out of his walk that day was a method of diagnosing human disease by means of the crystal or frost patterns made from a drop of the patient's blood crystallized, together with chloride of copper, on a glass plate. These crystal patterns distinguish a healthy person from a sick one and they have proved 82 per cent reliable in the diagnosis of cancer. In 1939 the crystallization theory was to bring Pfeiffer an honorary doctorate from Hahnemann Hospital and Medical College in Philadelphia.

While pursuing his crystallization studies, he was appointed director of the Biochemical Research Laboratory at Dornach, Switzerland, and manager and director of an 800-acre experimental farm at Loverendale, Holland. The farm, set up to carry out some of the agricultural studies of the laboratory, fed 700 families. For years, Pfeiffer commuted monthly between Holland and Switzerland. Then, in 1940, the Nazis smashed through Holland, and Pfeiffer, his wife, son and daughter took to the road as refugees.

They traveled across southern France and crossed into Spain by way of the Pyrenees, and flew from there into Portugal. On an October day in 1940, they arrived in New York with a few bags and \$50 in cash.

For the next few years, the scientist managed and helped develop a model experimental farm at Phoenixville, Pennsylvania, on a former private estate where prize tomatoes were grown in what had once been a palatial solarium. Then he bought his own farm near Chester, New York. What he got for the modest amount of cash he could raise was a primitive farmhouse, 260 stony acres and a herd of 40 cattle, which, it soon developed, were riddled with the dread Bang's disease.

This was the kind of challenge Pfeiffer liked. It gave him a chance to test his soil theories at the "dirt farmer" level. "You can't prove anything with a farm that's subsidized and loaded with gadgets that the average farmer can't afford," he says.

Within two years he had restored his land with scientific composts, fed the grain grown on it to his cattle and completely cured them without medication. "They cured themselves," he recalls. "We just provided the proper nutrition and care."

The astonishing little bacteria which are now the secret of converting garbage to a humus concentrate at Oakland indirectly saved Pfeiffer's life. In 1944 the strain of 16-hour days divided between science and farming proved too great. Pfeiffer collapsed one night over his worktable. At New York State's Summit Park Sanatorium he got the grim word that he was in an advanced stage of tuberculosis. The chances of recovery, even with surgery, were slim.

Pfeiffer spent more than a year in bed at the sanatorium, reading and staring at the ceiling, and doing more thinking

than he had ever before had time for. "I figured out that in order to stay alive in such a crisis a man has to find a tough job that is just too important to be left unfinished, and then" plunge into it and let the doctors do the rest." For Pfeiffer, the job was the search for his bacteria formula.

He knew by the statistics that the organic humus content of U.S. soil is decreasing to the danger level. Yet there was a treasure of organic matter in many waste products like garbage – if a swift method of converting them could be found. There was one important clue. In Europe, farmers for centuries have used various wild plants like nettle, dandelion and valerian to produce quicker breakdown and stabilizing of manures and composts. Did the secret lie in some bacteria which such plants breed?

When Pfeiffer was able to get out of his bed, he headed straight for the sanatorium's bacteriological laboratory. There, watching the action of tubercular bacteria under a microscope, he forgot his illness. He studied bacterial specimens from digestive tracts and noted how these germs actually broke down and digested waste material.

The clue he found in digestive tracts was that 25 to 30 per cent of the mass was bacteria. The bacteria digest and break down food, and would go on breaking it down until nothing was left, except that other bacteria take over and convert what remains into minerals and proteins needed by the body. Wild nettle and such plants contain hormones which cause a similar action to take place in the soil.

What Pfeiffer was looking for was a breed of bacteria he could isolate and control, to perform this kind of job on waste materials at the greatest possible speed.

A year after he began his research, he walked out of the sanatorium completely recovered; his case was regarded as something of a miracle. When he left, he had with him the formula he sought. To put it to work, he opened his own laboratory over a rented garage. That laboratory has now grown into a spacious building set in the peaceful woodlands of Spring Valley.

Today one section of the laboratory exhibits the results of this work. The walls are lined with shelves of test tubes and beakers filled with black earth made from nearly every kind of waste product imaginable – nutshells, human feces, cotton waste, sugar-cane stalks, even sheep's wool and human hair – and of course garbage.

It takes more than 50 different, carefully bred strains of bacteria, each with its own digestive job, to transform any one of these materials. Each strain is kept isolated because it is cultured only on that material which encourages its greatest growth in nature. Materials which might stimulate the growth of foreign bacteria are kept out of its food. Then the different bacterial strains are painstakingly blended together.

Each composted material must have its own special blend. Summer garbage, for example, wouldn't tempt a bacteria family that lives off winter garbage. Given the right food and temperatures, the bacteria will live indefinitely in their test tubes.

The bacteria are temperamental, and harder to manage than a trained flea circus. "You can see the fleas, but can you imagine telling one microbe from another?" smiles Pfeiffer. "Sometimes one of them will go on a hunger strike and die, and when one gets lost there's the devil to pay. One species got away from us recently; we thought we had lost it for good, but we found it later in a compost pile in Oakland."

The bacteria are harmless to humans and animals, but will decompose just about anything else. Not long ago, an improperly packed test tube broke inside of a bag on its way to Oakland. The busy bacteria had digested most of the bag and were sampling the wrappings before the accident was discovered.

Sally Burns, a pretty, twenty-five-year-old ex-Wave, deserves a share of the credit for getting the Oakland experiment under way. Sally, now Comco's lab technician, was a research assistant at the Pfeiffer laboratory when the bacteria starter was developed. Sally was fired by Pfeiffer's enthusiasm. When she returned to her home in suburban Buffalo, she went to local newspaper editors and got them to print the story of the bacteria discovery. She floored friends with long monologues on garbage.

But her campaign got results. One day Pfeiffer was asked to go to Buffalo to deliver a radio talk. While there, he met Richard Stovroff, who proposed that they go into business. The scientist refused any financial interest in the new company, but agreed to supply starter and donate his time in getting production under way. Oakland was selected as the site because of its proximity to the big California truck farms, and also because of its warm climate, which makes bacteria act faster.

Pfeiffer's Thrilling Moment

Recently, Pfeiffer flew to Oakland to have a look at his brainchild. Although he derives no personal profit from Comco (his laboratory in New York gets a small royalty for the use of the bacteria), the scientist behaved like a man just awarded an extra bonus. For on that day, he was informed, Comco was handling a quarter of Oakland's daily garbage – about 100 tons.

As Pfeiffer watched, lines of heavily laden garbage trucks rumbled down to the foot of Davis Street, which stops almost at the edge of San Francisco Bay. Jouncing across the refuse-strewn yard, the trucks dumped their aromatic loads. Tractor plows nosed it into the piles and pushed them into a long trough leading into Comco plant.

In the trough was a three-foot-wide conveyer belt. As it hit the belt, the garbage began to move into the world's only garbage assembly plant – or, to be absolutely correct, disassembly plant, because the garbage is taken apart rather than put together, as Pfeiffer will remind you.

The first thing the garbage encountered in the operation inside the plant was a pair of giant suction fans which hang over the belt. Acting like outsize vacuum cleaners, the fans picked off most of the wastepaper as the garbage sailed by. Later this paper would go to pulp companies.

Pfeiffer followed the mixture as it ascended on the belt to the second floor. Occasionally, he ran an experienced hand through it. "You can read the seasons by what people put in their trash pails," he told a visitor. "In summer, you get a lot of green vegetables and fewer meat scraps. Just after Christmas, the supply of broken toys and empty paper boxes is heavy. Even an occasional gift tie goes by. Then in spring come the half-used bottles of vitamin tablets and tonics. We are grateful for the vitamin pills," he smiled. "What we are trying to do is get them back into the food."

Except for the gamy scent, the atmosphere on the second floor of the building was like any small manufacturing plant. A crew of 10 workers bent over the belt. As the garbage marched past, they rummaged around in it with gloved hands, pulling out glass or wooden objects, plus whatever metal had been missed by the huge magnet that scans the refuse. These items were dropped into appropriate chutes.

When Comco began operations, the sorting problem seemed a big hurdle to overcome. Pfeiffer recalled: "We wondered whether we would be able to find people to keep their hands in garbage all day long. But we found all the help we needed. Garbage can become as inoffensive as any other product in time."

Properly picked over, the garbage next dropped through a chute and was carted by waiting trucks to a second conveyer some distance from the plant. This conveyer sent it riding to the top of a roofed platform, 10 feet off the ground, for the most critical part of the operation.

Two things happen to the mixture when it reaches the platform. First it is chewed up, somewhat the way meat is in a meat grinder. Then it is soaked under a shower.

When Pfeiffer clambered up to the top of the platform on this particular morning, he peered anxiously into a big iron hopper four feet across. Steel blades, each a foot long, were churning around against stationary knives in the hopper. As the garbage rode in, it was pulverized.

This part of the operation nearly put Comco out of business at the start because of trouble with the big grinding blades. Steel is tough, but "soft" garbage can be even tougher. The garbage would chew foot-long blades down to a nub in three



Sorting trash at the Oakland composting plant –from Colliers, May 31, 1952

days. After weeks of desperate experimenting, Comco abandoned commercial grinders and designed one of its own. A tougher steel was found and the blade pitch was changed. That did the trick.

A steady stream of water poured down on the mixture as it churned through the hopper. It was water spiked with bacteria – about a tablespoon for every ton of garbage. The action of the bacteria is immediate. An hour after the moistened garbage is spewed off the rear of the platform and stacked in heaps, a change begins to take place. Within two to four days the bacteria will multiply themselves 300,000,000 times. The action is so intense that the mixture heats up to more than 150 degrees and becomes almost too hot to handle.

How the Bacteria Go to Work

The mountainous piles present a weird spectacle on the San Francisco Bay landscape. For days, these heaps actually cook, throwing off dense clouds of steam. The furiously multiplying bacteria decompose and digest the garbage, creating enzymes which speed up the digestive process and make possible chemical changes; they act like the starter in your car, getting the engine going. In this case, the engine is the breakdown of elements and subsequent build-up of chemicals in the garbage.

In less than a week, as the decomposition is completed, the piles shrink in size and cool off. But during the digestive period, new, food-building bacteria have begun to grow. Their

function, as in the life process itself, is to use the decomposed matter to build living organic matter, store up nutrients in their mass to be used by growing plants, and change basic elements so they can be absorbed into plant roots.

Such bacteria life is present in virgin soil, but in the garbage compost the concentration is several hundred times greater. After the first week of violent decomposition, the garbage has ceased to be rotting material and has become a stabilized plant food. It has no odor; actually, it repels vermin and carrion birds, which hover around the piles but will not venture on them.

Thus, less than three weeks after an Oakland housewife scrapes clean her dinner plates, her garbage is ready to go back into the land as fertilizer.

Despite its pungent atmosphere, the Comco plant has become the showcase Pfeiffer dreamed of. Visitors include officials of cities with a sanitation problem (60 visited the plant in one day recently), university groups, and just plain farmers. One recent visitor was Lady Eve Balfour, organizing secretary of Soil Association, Ltd., a British agricultural group. Lady Eve climbed gingerly around the hillocks of garbage, and later, in an interview, singled out the Comco plant as the high spot of her U.S. tour.

"Love that gal," bubbled the Oakland Tribune, editorially.

Since the bacteria starter will make compost of just about anything from peanut shells to sawdust, there appears no limit to its possibilities. One new application for it was suggested by a Comco visitor, a farmer, who saw in the bacteria a new way of speeding the decomposition of cover crops and crop stubble which farmers plow under to return organic matter to the soil.

Today, in Salinas, the Atwood Crop Dusting Service, which specializes in spraying insecticides by plane, buzzes with curious coded telephone messages. "Okay. Fly on the bacs in number 75," says a voice at the other end of the line. Within an hour a little hedgehopping plane zooms in over a farmer's field, leaving a spray of hungry bacteria on the crops. "Bacs" is what Salinas farmers have dubbed Pfeiffer's bacteria. More than 2,000 acres of their land are now being treated this way, and orders are in for spraying another 5,000 acres.

Two ounces of "bacs" in five gallons of water will treat a whole acre and the total cost is \$5.50. Result: the cover crop of the stubble turns to fertilizer so fast the farmer saves a month in starting a new crop.

If this new use for Pfeiffer's bacteria seems to steal a little of the show from the plant-made compost the scientist is not the least bit disappointed. His hope is to get more natural fertilization into the land by any means possible, and his trained bacteria are not particular where they live, so long as the food is good.

In Florida and Texas, water hyacinths have begun to

choke the pond and lake waters, making them unnavigable. A Texas farmer, Alexander Debrulle, now harvests the hyacinths, composts them with "bacs" and gets five to 10 tons of rich plant food a day. A national dairy is studying plans for using the "bacs" on cow manure and putting itself into the fertilizer business.

In coming months, Pfeiffer will go to Cuba to set up an experimental plant to convert tons of waste sugar-cane fiber into much-needed organic fertilizer in that largely one-crop country.

Another Pfeiffer project now under way is the pilot plant he and his research associate, Peter Escher, have set, up deep in the ill-smelling New Jersey meadows across from New York City. A company there makes tallow from beef offal, and the idea was to make compost of the contents of cows' paunches. When the scientist arrived home after a day of skidding about on tallow-coated floors, he carried with him an aroma that sent the dogs scattering in the farmyard. Mrs. Pfeiffer made him change his clothes in the barn before he could get into the house. On the Pfeiffer farm, grainfields and a lush truck garden are fertilized entirely from former garbage. Curiously, there is almost no sign of insects, although no insecticides are used.

Pfeiffer does not find this remarkable. The 800-acre farm which he managed in Holland required neither chemical fertilizers nor insecticides, yet had one of the best dairy herds in Europe. Wheat yields reached 100 bushels an acre, among the highest recorded anywhere in the world. The farm's produce was so nutritious that in a survey the 700 families who lived off it reported they needed only two thirds of what they once ate to satisfy their needs.

Crops That Resist Insects

Pfeiffer credits this to the scientific composts used, which in turn produced healthier, more nutritious crops. Crops grown in a robust soil are better able to resist insect attacks; an example is the 1,000-acre Malabar Farm of author-farmer Louis Bromfield, which depends largely on composted organic matter and requires no insecticides.

Dr. Firman Bear of Rutgers University, described by the National Fertilizer Association as one of America's outstanding scientists, said recently: "... (chemical) fertilizers alone, no matter how heavy the rate of application, will not meet the requirements for soils that are producing cultivated crops. Soil must be fed organic matter in larger amounts than the roots and residues can provide. There is need for study of the possibilities for recovery of city wastes."

Pfeiffer declares that plants which get no organic matter and are fed exclusively on chemicals are somewhat like unhealthy people who grow fat on sugars and sweets. According to research

done at the Missouri Agricultural Experimental station, the plants produce an unbalanced amount of carbohydrates (sugar) at the expense of protein and trace minerals. Insects, he says, prefer these “sweet” plants and are able to attack them more easily. The plants, in turn, provide less nourishment to humans.

Along with all leading agricultural authorities, Pfeiffer emphasizes that insecticides are indispensable to general farming in America: “Without insecticides and fertilizers, our farm economy would collapse and our current food production would be impossible. However, the phenomenally increasing need for insecticides is a warning sign of the dangerous deficiencies developing in our croplands, which must in turn affect national health.”

To overcome these deficiencies, Pfeiffer wants to see a partnership of chemical fertilizing and organic composts. “Both are needed,” he says. “Both work together.”

No man to rest on his laurels, Pfeiffer zestfully welcomes the stream of inquiries which arrive in the mail each day from an increasing number of U.S. cities, and from farther afield as well. A Mexican firm wants to set up a nation-wide composting plant, and farm organizations in Australia and New Zealand have invited him for a demonstration tour there next year.

The busy scientist has accepted the latter invitation, as well as requests from the Indian and Nationalist Chinese governments to visit India and Formosa for what may well be the crowning achievement of an already notable career: to demonstrate how his bacteria can make human fertilizer safe for composting. Such waste matter is now a main source of fertilizer in both countries, but it is also a main source of epidemic infections, because it carries typhus and other germs.

Sanitary human fertilizer, produced by trained bacteria, has already been developed by Pfeiffer in his laboratory. It is exactly like the Oakland compost. Used on a wide scale, it may well save millions of lives in undeveloped countries and change the economic course of history.

Gratitude for Dandelion Blossoms

In addition to all who were mentioned in the last issue, the following people have also contributed dandelion blossoms. Thank you for your support of JPI efforts to supply remedies for the healing of the Earth.

David Bauer – Bayside, CA

Regine Carr – Chelmsford, MA

Lenna Keefer – Linville, VA

Betty Mize – Bassett, VA

Steiner on the Use of Human Manure

Abigail Porter

In the discussion section following lecture eight, in the Creeger/Gardner translation of *Agriculture* (p. 178–170), Steiner did not recommend the use of human manure as it would have little fertilizing effect compared to animal manure and could be harmful. In Appendix B, p. 250 of the same book, gardening teacher Gertrud Michels reported that when Steiner was questioned about using human manure (night soil) he responded that it would need to go through several transformations before it could be used on food grown for humans. “The proper cycle is from the human being to the plant, from the plant to the animal, from the animal again to the plant, and only then from the plant back to the human being.” One assumes that the manure from both humans and animals would be composted before they are applied to the soil.

Dr. Pfeiffer may have developed specialized bacteria that transformed and enlivened human manure so completely that the cycle that Steiner referred to may not be needed or perhaps Pfeiffer still intended that the compost would go through the same cycle. Since almost half of the population in this country is now on pharmaceutical drugs, it seems like it is an area to approach with caution and adequate testing to insure that the drugs have been completely broken down in the composting process before they are applied to the soil.

Renewal Time

It’s time to renew both your subscription to the *Applied Biodynamics* newsletter and your Associative Contract for 2015. As noted on page 18 of this issue, we will be moving to a biannual publication schedule with our next newsletter. Full details about the change and complete subscription information can be found in the note.

We have also revised our Associative Contract for the 2015 year and are offering discounts for renewal by March 31; details can be found on page 18. Please contact the office with any questions at (540)745-7030.

Please Note Our New Contact Information

Josephine Porter Institute

The Village Green, 201 East Main Street #14

Floyd, VA 24091

Phone: (540) 745-7030

Frequently Asked Questions: Applying the Preparations

In what order should I use the preparations? And what time of day should I apply them?

JPI recommends that you get a foundation of all the compost preparations on the soil in the form of biodynamically-treated compost first or by using one of the preparations that contain all of the compost preps. If you are just starting out and do not have treated compost to apply right away, or enough compost, you can use Barrel Compost (BC) stirred for twenty minutes, or Prepared #500 stirred for one hour. Both contain all of the compost preparations within their formulation. You may also use the Pfeiffer BD Field and Garden Spray, which contains all of the compost preparations plus BD #500. It must be activated by moistening 8–24 hours ahead of time, but does not require any stirring. This first step increases the effectiveness of all the other preparations.

BD #500(horn manure) is applied next, beginning in spring. It is sprayed directly onto the earth to stimulate proliferative growth of roots, germinating seeds and soil microorganisms that result in good soil humus formation. It may be used as a seed or a root soak when transplanting. It is also sprayed to assist the breakdown of green manure crops when they are turned in, and in the fall when garden stubble is turned in. All of the earth or brown preparations that are sprayed on the soil are applied in the late afternoon or early evening when the dew is falling and the earth is breathing in. They are more effective if the soil is moist and has begun to warm a bit, as in spring.

The BD #501(horn silica) is used *only* after BD#500 has been used. It is sprayed on annuals after the second or third set of true leaves has emerged, when the plant is 3–6" tall, the roots are well established, and several days to a week or more after transplanting. Horn silica is sprayed in a fine mist upward into the atmosphere, falling on the foliage to stimulate growth and assimilation processes and photosynthesis. It is stirred and sprayed at sunrise as the earth is breathing out and dew is still present on the leaves before the plants are exposed to strong sunlight, which may cause burning on the foliage. It may also be applied again after blossom set to improve the sweetness and flavor of fruit. Repeated applications may be made through the season if the weather is particularly wet, cold and overcast to bring more sun forces to the plants. It is best used when all danger of frost has passed.

Plant silica or BD #508 (*Equisetum arvense*) may be applied to the soil and to plants at the beginning and throughout the season to help prevent detrimental watery influences that could result in fungal plant diseases. It is sometimes used more frequently in wet, humid conditions to increase its preventative benefits. It can be applied in the evening to the soil and plants or in the morning on plants.

Both the plant and horn silica strengthen the silica processes in the plants helping them become more resistant to insect and fungal attacks.

These are only general recommendations. All of the preparations may be applied more frequently and specific applications have developed over the years. For more detailed directions on the use of the preparations, see "Brief Directions for the Use of Biodynamic Sprays 500, 501 and 508" in the Fall 2005 *Applied Biodynamics*, issue no. 50. Some recommendations have changed over the years. For instance, the one-unit portions of BC, 500 or "Prepared" 500 which treat up to an acre should not be divided even if they are being applied to less than one acre. The full one unit portion should be used no matter how small the area to be treated, to generate enough of a force field to be effective. However, the Pfeiffer BD Field and Garden Spray may be subdivided in proportion to the amount of land being treated.

Can the preparations be mixed together?

It is best to use the preparations separately, especially the first time they are applied. After all the preparations have been applied individually at least once or twice, if time is a limiting factor, earth preparations may be combined. For instance, BC may be added to BD #500 during the last twenty minutes of stirring and sprayed out together in the evening. The two silica preparations may be combined the same way and sprayed out at sunrise. One would generally not combine the earth preps with horn silica as they are sprayed out at different times of the day.

How often should I spray the preps?

Traditionally, the preps have been applied a minimum of twice a year; for BD #500, once in the spring and again in the fall. BD #501 is applied in late spring and again in mid-summer. The equisetum prep is applied in spring and fall and when excessive wet conditions prevail. Barrel Compost is applied at the beginning of the season, when winter green manure crops are incorporated into the earth and at the end of the season to assist in the breakdown of crop residue and to stimulate a decomposition when heading into winter.

With the increase of pollution in the water, air and rain, climate change and more dramatic and unpredictable weather, and the increase of electromagnetic forces, all of which contribute to a chaotic state from a plant's perspective, we are recommending much more frequent application of all of the preparations. More remediation is necessary to counteract these life-destructive forces and to reinforce the vitality of the soil, plants and the whole Earth's energy field.

Are there times when the preparations should not be applied?

Yes, there are times when application of the preparations

and working with the soil should be avoided if possible. We recommend that you use the biodynamic planting calendars as a guide to avoid lunar transition or “void of course” times, planetary conjunctions, lunar nodes, perigee and apogee, and some planetary oppositions and trines, as these are known to have detrimental influences on plant growth and germination. Unfavorable times or black out periods are clearly marked in the calendars. Similarly, there are beneficial times to spray biodynamic preparations. The calendars will also guide you on the best times to augment the forces and effectiveness of the preparations. Avoid applying preparations right before or during rain or in very windy conditions, as much of the effectiveness may be lost. They should also not be applied in hot, intense sunlight, and preferably not on bone-dry soil. BD #501 (horn silica) should never be used before transplanting.

When using the preparations for orchards, or other fruit bearing shrubs or vines, establish a natural rhythm of stimulating root growth by first applying horn manure (BD #500) until small trees are well established. Then, begin applications of horn silica (BD #501) after the trees are of fruit bearing age, as horn silica assists with fruit formation and quality. Avoid applications of horn silica too soon in the life of fruit trees, vines and small fruits to establish strong, healthy, long-lived perennial fruiting plants. Horn silica should not be used in hot, droughty conditions or when plants are stressed from lack of water.

What is the better day to use the preps: root, leaf, flower, or fruit?

The best days to use the preparations are when you will actually do it, when you have the time and when the weather is favorable. Specific days may be chosen to enhance the particular

crop you are treating. For instance, if you were growing leafy crops, sprays would be applied for greatest benefit when the moon is in front of a water constellation, on leaf days. In a backyard garden with a diversity of close plantings, it is often difficult to spray for specific type of plants. In the beginning of the season, the application of BD #500 on a root day is beneficial to stimulate strong, healthy roots of all the plants, providing a foundation for all future growth. For a broad application on a variety of crops, BD #501 may be applied on a leaf day to stimulate the silica forces and to increase photosynthesis. This will help the plants be more resistant to insect and fungal damage. After blossoming, the application of BD #501 on fruit/fire days will increase the flavor and sweetness of the fruit of plants like tomatoes, beans, squash and all the other fruiting plants.

Both of Maria Thun's books, *Gardening for Life* and *The Biodynamic Year* as well as the *Maria Thun Biodynamic Calendar* and the *Stella Natura Biodynamic Planting Calendar* are excellent resources for working with the constellations and choosing specific days to enhance intended results. The article and interview with Sherry Wildfeuer, “Earth, Water, Air, and Fire: Working with the Elements and the Cosmos” in Spring 2013 *Applied Biodynamics*, issue no. 80, relates Sherry's experience of working intensely with the application of preparations on specific days to enhance qualities appropriate for the part of the plant being used. Sherry is the creator of the *Stella Natura Biodynamic Planting Calendar*. All of the above publications are available through JPI.

Through keen observation and paying attention to the rhythms of the day, season and year, and the needs and condition of the soil and the plants, you will develop your own sense of when to use the preparations.

Winter Application of Biodynamic Tree Paste

Abigail Porter

Biodynamic tree paste is applied once a year, in late fall after leaf drop or in late winter before sap flow and bud break, but when the temperature is above freezing. It is used to provide a protective covering primarily on the bark of fruit trees to enhance the vitality, to help protect the bark from splitting, to discourage insect breeding and infestation, to heal injuries and to cover wounds made during pruning. It may also be applied to fruiting bushes, vines and roses. A coating of the tree paste may slow blossoming so there is less danger of early frost damage. It is recommended for newly planted trees to give them a good start and it is also helpful for ailing or stressed trees. One of original recipes contained equal parts of sticky clay, cow

manure and fine sand. Later, Dr. Pfeiffer modified it by adding one stirred unit of BD #500 (horn manure) and .5 to 1.5 percent *Equisetum arvense* (BD #508) tea for its anti-fungal properties. Another recipe contained equal parts of fine clay and cow manure and one unit of stirred BD #500 containing enough water to make a paste the consistency of heavy cream or paint. To this, sufficient equisetum tea is added so it is one percent of the total volume.

The tree bark should first be brushed or scraped to remove moss, lichens and dead, loose bark which provides breeding grounds for insects. Backyard gardeners can use a whitewash brush or paintbrush to apply the paste by completely covering smaller trees and the trunks and lower branches of larger trees. Care needs to be taken that you do

not break off buds as you are brushing the paste on. The paste may be further diluted and strained to use as a spray to cover the upper branches of tall trees. Hand application is impractical for large orchards and the spray is used to cover the whole tree. Over the years, practitioners have developed their own variations according to their individual needs. JPI currently makes available a version that contains bentonite clay with the Pfeiffer BD Field and Garden Spray and fermented BD #508. You may also make your own and a recipe with exact measurements for a few larger trees or several small trees appears in the Fall 2004, Applied Biodynamics, Issue No. 46, which you may download free on the JPI website under Education, then Using and Making Preparations: www.jpibiodynamics.org/wpcontent/uploads/2015/01/TREEPASTE-RECIPE.pdf. Or, you may contact the JPI office for a printed copy of the recipe. There are also recipes in *The Biodynamic Orchard Book* by Ehrenfried Pfeiffer and Michael Maltas.

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- Koepf, H.H. *Bio-Dynamic Sprays* (based on a pamphlet of the same name written by Evelyn Speiden Gregg), currently out of print.
- Pfeiffer, Ehrenfried. *Using the Biodynamic Compost Preparations and Sprays in the Garden, Orchard, and Farm*, currently out of print.



Applying tree paste to a young tree

In Memory of Ruth Zinniker and KK Haspel

Abigail Porter

This year marked the passing of two influential women dedicated to the healing of the earth through biodynamics. Ruth Zinniker's influence spanned over fifty years and encompassed a wide circle on this continent. KK Haspel was from the next generation of practitioners and though her time on earth was much too short, her enthusiasm for biodynamics touched and changed her students and the larger community where she lived on Long Island, New York. Both were strong supporters of JPI and we are grateful for their many contributions to JPI and to the wider community.

Ruth Zinniker's passing brought up a flood of memories from my younger years in biodynamics with my mother and other early pioneers. It especially brought back memories of all the women dear to me, who inspired me and who also shared that same special sparkle in the eyes that Ruth Zinniker had, most notably, Margrit Selke (who continued Dr. Pfeiffer's work with the two Pfeiffer products at the

Pfeiffer Foundation well into her nineties), my godmother, Marie Fetzner, and of course my mother, Josephine. Their passing has signified an end of an era. As most of the original advocates for biodynamics have passed on, younger generations inspired by them have enthusiastically taken up the task of enlivening the soil and plants to provide healing food for the health and evolution of humanity.

Ruth Zinniker

October 22, 1932–July 16, 2014

Ruth Zinniker was one of the last remaining pioneers of biodynamics in North America who had a direct connection, through her father, with the original impulse in the Old World. Her father, Immanuel Voegelé, was one of the farmers who asked Rudolf Steiner for advice and he attended the series of lectures in 1924 that became the *Agriculture Course*. Her father managed the first biodynamic farm in Silesia (now part of Germany and Poland), which is where she was born.



Ruth Zinniker speaking with Laura Riccardi. Photo by Erik Thomsen

In 1958, she came to the United States and while working at the Ernst and Marie Fetzer Farm and Guest House in New Hope, Pennsylvania, she met her future husband Richard Zinniker at a nearby biodynamic conference. In 1961, they were married and Ruth moved to the Zinniker family farm in Elkhorn, Wisconsin where she started making the individual preparations and introduced the spraying of preparations where previously only the Pfeiffer BD Compost Starter had been used. The Zinniker Farm is one of the oldest biodynamic farms in this country, having been farmed biodynamically since the late 1940s.

Since the 1960s, the Zinniker Farm became an epicenter for the growth of biodynamics in the region and in Wisconsin in general, as well as the rest of the country. Starting in the 1970s, hundreds of Waldorf school children and their families, farmers, gardeners and interns came several times a year for festival celebrations and to make the biodynamic preparations. In spring, extra dandelions were picked by the children and sent to JPI to insure that enough dandelion preparation was made to supply everyone's needs. One can only imagine how many children's lives were changed by Ruth's presence and their time on the farm. No doubt her influence will continue to ripple out through the generations.

Tributes to Ruth Zinniker are on the Biodynamic Association website where you may also add your memories of her: www.biodynamics.com/ruth-zinniker. For more background on Ruth, see the two interviews with her in the Spring 2001 issue of *Applied Biodynamics*, Issue No. 32.

KK (Kathy Keller) Haspel

December 13, 1950–October 4, 2014

I was not fortunate enough to meet KK Haspel in person but her exuberance for biodynamics shone brightly through her students, whom I have met at JPI workshops and various conferences and fairs. Her profound influence

was evident by their enthusiasm and joy expressed for KK, her classes, and biodynamics.

In 1999, KK and her husband Ira bought a 5-acre plot in Southold, Long Island, which became known simply as 'The Farm.' Knowing that she wanted to farm organically, KK immediately started taking classes at the Nature Lyceum, a school for environmental horticulture where she also first learned about biodynamics. Feeling a real connection to the principals of biodynamics, she soon took the biodynamic course at The Pfeiffer Center in Chestnut Ridge, New York. What started as a plan to raise flowers grew into a market garden supplying her CSA and local chefs. She evolved from student to teacher as she saw her gardens transform. Farming and biodynamic education became her third career. Over a ten-year period she transformed what was once just sand to a foot of humus. "KK saw everyone, everything as part of the same cosmic energy," said her husband, Ira Haspel, "and she was able to connect to that energy in her plants, and in all of us."¹

KK has left a rich and varied legacy. She was a driving force in the North Fork's farm-to-table movement and an advocate for school gardens in surrounding Long Island communities. Chefs were impressed with the vibrant taste and color of her produce, like none they had experienced before.² She was dedicated to teaching children about food and shortly before KK passed she shared a dream with a close friend who wrote, "Last week, I was sitting with KK and she told me about a dream she had. She said that she was concerned about children going to school hungry. I was not surprised to hear this, as KK dedicates her time to creating school gardens and helping those in need. KK's dream is to create the 'Young Gardeners Club.' The club is designed to engage children before the school day begins by teaching them about farming. During the instruction, we will offer fresh organic juices. We will feed the children and 'plant the seeds' of our future farmers."³

Heartfelt gratitude goes to both of these special women, who were deeply connected to the biodynamic preparations and the spirits in nature. They had a profound influence on the growth and appreciation for biodynamics.

Notes

- 1) www.newsday.com/long-island/obituaries/kk-haspel-southold-farmer-dead-at-63-1.9473050
- 2) www.patch.com/new-york/northfork/kk-haspel-southold-farmer-died-saturday
- 3) www.southoldlocal.com/2014/10/05/friend-pays-tribute-kk-haspel-pioneer-biodynamic-farming-passed-away-saturday/

Applied Biodynamics to be Published Biannually

Publishing the JPI newsletter is a significant task and we seek to maintain the quality it has become known for. Yet, given relatively limited financial resources and increasing time constraints of our editors (who share in much of the writing of the newsletter), the JPI Board has decided to publish the newsletter twice a year rather than quarterly, instead of hiring additional staff. This will help us to maintain the quality of the publication, while at the same time making it easier to meet our deadlines. In the future, we will publish a spring/summer issue in the first half of the year and a fall/winter issue in the second. Each issue will have more educational content in addition to the usual featured article or interview. Because so many new people are coming to biodynamics, additional content will include a selection of frequently asked questions and seasonal recommendations for working with the preparations in the garden. There will also be useful information for those of you who are more experienced. We will be sharing anecdotes from practitioners on specific application of the preparations. We welcome and encourage your contributions throughout

the year so that we can share them with the biodynamic community.

The annual subscription rate for mailed paper copies will remain the same at \$30.00, or \$20.00 if you have an Associative Contract. Additionally, we are offering two back issues of your choice for new subscriptions. For current subscribers, we are offering three back issues when you renew for 2015 since 2014 will be short one issue. There is a lot of valuable and helpful information in back issues of the newsletter and we have included an index in this issue to facilitate your selection. The index is also available on our website at www.jpibiodynamics.org/product/newsletter-index/.

As we make these changes, please let us know how this publication can better serve you. What questions do you have? What subjects would you like more information about? Do you have experiences that you would like to share? Send any inquiries or suggestions to info@jpibiodynamics.org with *Applied Biodynamics* in the subject line and it will be forwarded to the editors.

2015 Associative Contract Has Been Revised

We are continuing to offer Associative Contracts for the 2015 season with discounts for payment made by March 31. This year, we have made some adjustments and simplified the discount fee schedule. **With pre-payment by March 31, contracts for the amount of preparations needed for one or two acres will receive a 10% discount off the current catalog prices. A 15% discount will be applied to a 3 or 4-acre contract and contracts for five or more acres will continue to receive a 20% discount.**

As before, contracts may be customized to your specific needs and the Pfeiffer BD Compost Starter, the Pfeiffer BD Field and Garden Spray, and the pre-potentized spray preparations may be substituted or added on with the fee adjusted accordingly. By designating the desired delivery dates, you will receive preparations close to the time you plan to use them. Any additional preparation or Pfeiffer product orders placed beyond your spring and fall delivery will qualify for the appropriate discount according to the number of acres you contracted for. Actual USPS flat rate shipping charges will be added to all shipments.

Associative Contract partners may also subscribe to the *Applied Biodynamics* newsletter for \$20.00 (or \$15.00 for the online version), instead of the regular rate of \$30.00.

For those of you who are not familiar with our Associative Contract arrangement for preparations, it is similar to the economic concept and associative relationship of

Community Supported Agriculture (CSA). Biodynamic practitioners may contract to support the yearly work of JPI at the beginning of the season, at a level that is appropriate for their preparations needs and acreage requirements. In turn, JPI can continue to support the health of the soil, the plants and the health of the Earth by providing you with biodynamic preparations and education on their use. This partnership assures that your biodynamic preparation requirements will be met and it helps us plan our preparation-making and distribution schedule in advance.

Benefits of the Associative Contract:

- Assured delivery of spring and fall preparations
- 10-20% discount on preparations
- Annual consulting in the use of the preparations
- \$10-\$15 off JPI *Applied Biodynamics* newsletter

Standard Spring Delivery includes:

- One set of Biodynamic Compost Preparations (BD #502-507) treats 1-15 tons of compost
- One unit each of BD #500 (horn manure), BC (Biodynamic Compound Preparation, a.k.a. barrel compost, Thun recipe), and BD #508 (*Equisetum arvense*/horsetail herb) **for each acre in the contract**
- Two units BD #501 (horn silica) **for each acre in the contract.**

Standard Fall Delivery includes:

- One set of Biodynamic Compost Preparations (BD #502-507) treats 1–15 tons of compost
- One unit each of BD #500 (horn Manure), BC (Biodynamic Compound Preparation) and BD #508 (*Equisetum arvense*) **for each acre in the contract**

The contract and more information are available on our website: www.jpibiodynamics.org

The Associative Contract must be mailed in or you may contact the office for more details and sign-up. Larger farm operations, market gardeners, or growers with special needs can anticipate a contract with JPI that will meet both their preparation and financial requirements. Contact JPI for an Associative Contract plan that meets your needs at (540)745-7030.

JPI Recommends

Abigail Porter

Dancing with Thoreau, DVD – \$20.00

Dancing with Thoreau is a beautifully filmed documentary by long time biodynamic farmer and filmmaker, Chris Korrow. There has been a groundswell of interest and concern from various quarters lately on the consequences of our disconnection from nature and the benefits of connecting deeply and participating with nature. Chris shares insights from fourteen luminaries from diverse areas of science, theology, ecology and education including Dennis Klocek, David Suzuki, Ph.D., and Richard Louv, author of *The Last Child in the Woods* and *The Nature Principle*.

Time in the natural world reduces stress, improves mental and physical well-being while showing us that all life is interconnected and interdependent. Children who are immersed in nature before age five develop different parts of the brain, are more self-confident, are better at problem solving and have better social skills. Yet now, the typical American spends 90% of his or her time in buildings. As Stephan Schwartz says in the film, “Choices which separate us from nature ultimately serve neither nature or ourselves.”

The film is a wonderful tribute to Thoreau who noticed and wrote about our separation from nature over 150 years ago. It a must-see for school administrators, educators, children and parents and especially anyone parenting or working with ADD, ADHD or autistic children. The future of the earth depends on the next generation(s) having a deep spiritual connection to nature and a knowing that we are all connected. As scientist and environmentalist Aldo Leopold was quoted in *Thinking Like a Plant: A Living Science for Life* by Craig Holdrege, (a book with the same theme is reviewed

in the Spring 2014 issue of *Applied Biodynamics*, Issue No. 84), “We can only be ethical in relation to something we can see, feel, understand, love or otherwise have faith in.”

Chris Korrow previously produced *Bugs*, which was featured on Public Television, and *Frost Flowers*.

Other Titles Now available at JPI

A Monk in the Bee Hive: A Short Discourse on Bees, Monks and Sacred Geometry – Skye Ann Louise Taylor, \$16.00

Reverence, Obedience and the Invisible in the Garden: Talks on the Biodynamic French Intensive System – Alan Chadwick, \$25.00

Save the Date

March 7: Getting Started – First Steps in Beekeeping

This workshop will offer practical advice and decision-making for those who want to have bees and for those who had bees and want to start again. The Floyd Country Store, 206 South Locust St., Floyd, VA. www.spikenardfarm.org/calendar/upcoming/

March 7: Beekeeping – Spring Swarms: Building the Colony

Get hands-on experience housing or catching a swarm and inspecting a hive with the option of assembling a hive kit of your own. With Keith Gelber at Rudolf Steiner College, Fair Oaks, CA. www.rudolfsteinercollege.edu

March 14: Spring Planting and Weed Management

Learn about plant choices, planting times and planning for managing weeds in the spring. This workshop will explore propagation of annuals and perennials, different methods of weed management including ashing of weed seeds. With Harald Hoven at Rudolf Steiner College, Fair Oaks, CA. www.rudolfsteinercollege.edu

On-Going Monthly:

Chesapeake Biodynamic Network (CBDN)

Networking, sharing, BD workshops and study of the *Agriculture Course*. College Park, MD. Contact: Michael Judge at mjudge2000@gmail.com

White Rose Farm

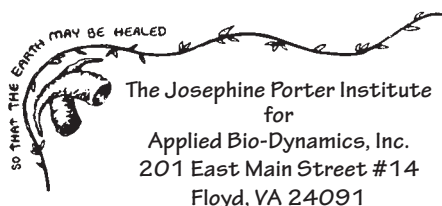
Classes, family days, biodynamic workshops and festival celebrations held at White Rose Farm in Taneytown, MD. For info, visit www.whiterosefarm.com

April 11-12: Mother Earth News Fair

Visit JPI at booth #1305 at the Mother Earth News Fair, Western North Carolina Agricultural Center, Asheville, NC. <http://www.motherearthnews.com/fair/north-carolina>

“Nutrition as it is today does not supply the strength necessary for manifesting the spirit in physical life. A bridge can no longer be built from thinking to will and action. Food plants no longer contain the forces people need for this.”

Rudolf Steiner, as quoted by Ehrenfried Pfeiffer in the preface to *Agriculture Course* (Adams translation), p.7



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