A READER'S JOURNAL

Agriculture Course, GA#327
The Birth of the Biodynamic Method
by
Rudolf Steiner

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Chapter: Spiritual Science

We live in a world in which we expect a scientist to put the world under a microscope and come up with answers for us. That leaves most people completely unprepared for Steiner's look at agriculture, because he puts the world of agriculture under a *macroscope* and comes up with answers for us: how we should farm, how we should nourish our plants, how we should eliminate weeds and insects, and how we should schedule our activities in synchronism with the moon, planets, and stars which comprise the macrocosm in which we live and breathe.

What is a macroscope? It's a name I coined for Steiner's technique of looking at the big picture, explaining how to understand agriculture holistically. Contrast Steiner's approach to that of the horticulturist with a microscope identifying minute parts of plants or a chromatograph to identify minute percentages of zinc or lithium or silica, etc, and prescribing chemical sprays to combat fungi and wilt, insecticides to combat pests, and herbicides to kill weeds.

What do we see when we put our eyes to Steiner's macroscope and peer through its lenses? Marvelous things! Breathtaking things!

We see that there are no unhealthy plants, only unhealthy soil; no weeds to be killed, only healthy plants where we don't want them to be; no insect pests, only insects that are attracted to feed on plants made weak by chemical fertilizing(1). We see how to treat soil to make it healthy so that fungi, mildew, wilt, rot, and other so-called plant diseases rarely happen in our gardens, and are immediately remedied when they do appear. We see how to make our garden unattractive to insect pests and weeds. And best of all we see how healthy the food we eat from our garden makes us.

Steiner's macroscope is not some computerized, electronic marvel, but a way of our interacting with the macrocosm in which we live; it revives for us the way farmers lived in harmony with their environment for millennia before the advent of so-called modern farming. You can choose to grow your own vegetables and fruits this way or not, but I guarantee you that the food you grow using these techniques will be the best-tasting food you've ever eaten, and time will bring you robust health as a side-effect(2).

From the 1958 Preface of this book, we read about pests and the deleterious effects of chemical fertilizers

and pest control. The situation over the fifty years to now has grown worse, not better, as one can easily verify by a quick walk through a garden center with the numerous Weed-and-Feed products on display.

> **[page 16] Pests are one of the most interesting and instructive problems, looked at from the bio-dynamic viewpoint. When the biological balance is upset, degeneration follows; pests and diseases make their appearance. Nature herself liquidates weaklings. Pests are therefore to be regarded as nature's warning that the primary forces have been dissipated and the balance sinned against. According to official estimates, American agriculture pays a yearly bill of five billion dollars in crop losses for disregarding this warning, and destruction of some of the insects succeeds only in producing new, more resistant kinds. It has been established by the most advanced research (Albrecht of Missouri) that one-sided fertilizing disturbs the protein-carbohydrates balance in plant cells, to the detriment of proteins and the layer of wax that coats plant leaves, and makes the plants "tastier" to insect depredators. It has been a bitter realization that insect poisons merely "preserve" a part of moribund nature, but do not halt the general trend towards death. Experienced entomologists, who have witnessed the failure of chemical pest-control and the threats to health associated with it, are beginning to speak out and demand biological controls. But according to the findings of one of the American experimental stations, biological controls are feasible only when no poisons are used and an attempt is made to restore natural balance. In indications given in the Agriculture Course, Rudolf Steiner showed that health and resistance are functions of biological balance, coupled with cosmic factors. This is further evidence of how far in advance of its time was this spiritual-scientific, Goethean way of thought.**

Rudolf Steiner chose to give this course of lectures, not in some classroom in a German university in a big city, but in a house on the large farm of Count Keyserlingk in the northeastern section of what is now the Czech Republic, the region of Koberwitz.

> **[page 17] Indeed, it is deeply gratifying that we are able to hold this Agriculture Course here in the house of Count and Countess Keyserlingk. I know from my former visits what a beautiful atmosphere there is in Koberwitz — I mean also the spiritual atmosphere. I know that the atmosphere of soul and spirit which is living here is the best possible premise for what must be said during this Course.**

The hardest part to believe about this agriculture course is its all-encompassing nature: all of human life on Earth and in the universe are involved in the process of sowing, tilling, harvesting, and enjoying the fruits of gardening. You will be skeptical, believe me, about this aspect of the course, but you do not have to believe or understand fully what it contains in order to benefit from its contents and prescriptions. You only have to suspend your disbelief long enough to follow the prescriptions and observe for yourself the results. If you are not willing to suspend your disbelief, I believe you would be better served to stop reading this review now, and buying yourself a booklet about how to weed and feed your garden using Vigoro or Miracle-Gro or Roundup or any number of fertilizer and pesticide products. You will find that you have lots of products to buy and plenty of friends to commiserate with about your gardening woes.

One cannot look at a plant in isolation from its environment. Take a simple beet: it is red, grows underground, is a root vegetable, and a modern scientist can analyze its chemical, organic compounds, and the various vitamins it contains. Nowhere will the scientist find under her microscope that eating beets is good for one's thinking ability! There is no thinking vitamin, but beets produce an impetus to think.

That reminds me of a story. When I was a small boy, I hated liver and refused to eat it, but I loved beets so my mother gave me a lot of beets. I recall her saying on more than one occasion, since you don't eat liver, it's good for you to eat beets because its red like the blood in liver. Even as a six-year-old that statement seemed weird to me, some kind of faulty thinking, but I liked beets and that enabled her to feel

good about giving me beets instead of liver, so I didn't care what reason she used. It wasn't until I began read about beets (beetroot) in Steiner's work(3) that I appreciated the boost of my thinking power from all those beets I ate as a young child. Yet today, I will often have a small can of sliced beets for lunch.

Scientists study living organisms in isolation when they consider the beetroot separate from the medium in which it lives, the soil of the Earth, but these same scientists would not consider treating the magnetic needle of a compass separate from the Earth! They do not take apart the metal of the needle looking for the cause of its pointing North, no, they examine the needle in the context of its connection with the Earth (and its magnetic field). But lacking understanding of the cosmic forces which operate upon the beet, these same scientists ignore the Earth and the planetary forces upon the beet, up until now.

> **[page 20] Anyone who looked in the magnet-needle itself for the cause of the peculiar position it takes up, would be talking nonsense. You can only understand the direction of the magnet-needle if you know how. it is related to the whole Earth. Yet the same nonsense (as applied to the magnetic needle) is considered good sense by the men of to-day when applied to other things.**
>
> **There, for example, is the beetroot growing in the earth. To take it just for what it is within its narrow limits is nonsense if in reality its growth depends on countless conditions: not even only of the Earth as a whole, but of the cosmic environment. The men of today say and do many things in life and practice as though they were dealing only with narrow, limited objects, not with effects and influences from the whole Universe. The several spheres of modern life have suffered terribly from this, and the effects would be even more evident were it not for the fact that in spite of all the modern science a certain instinct still remains over from the times when men were used to work by instinct and not by scientific theory.**

The Farmer's Almanac is the American form of what Steiner refers to as old "Peasant's Calendars" in the next passage. He admires the wisdom of these calendars, how it averts superstition by its use of humor, but he is careful to point out that his spiritual science is not based on these ancient instincts, but provide a modern view of the spiritual realities underlying these instincts.

> **[page 20, 21] Such instincts really underlay all that men had to do before a "science" of these things existed. And the instincts frequently worked with great certainty. Even to-day one is astonished again and again to read the rules in the old "Peasants' Calendars." How infinitely wise and intelligent is that which they express! Moreover, the man of sure instincts is well able to avoid superstition in these matters: and in these Calendars, beside the proverbs full of deep meaning for the sowing and the reaping, we find all manner of quips, intended to set aside nonsensical pretensions. This for example:**
>
> **"Kräht der Hahn auf dem Mist,**
> **So regnet es, oder es bleibt wie es ist."**
> **"If the cock crows on the dunghills**
> **It'll rain — or else it'll stay dry(4)."**
>
> **So the needful dose of humor is mingled with the instinctive wisdom in order to ward off mere superstition.**
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> **We, however, speaking from the point of view of Anthroposophical Science, do not desire to return to the old instincts. We want to find, out of a deeper spiritual insight, what the old instincts as they are growing insecure — are less and less able to provide. To this end we must include a far wider horizon in our studies of the life of plant and animal, and of the Earth itself. We must extend our view to the whole Cosmos.**

Human beings represent the highest form of life on Earth and as such we are the most free from our connection with the surrounding cosmos, more than animals, and much more so than plants. Steiner gives

a couple of examples of how our connection to the cosmos appears. One is the seven-day period of fevers, and the second is the connection of menstrual cycles in women being tied to the phases of the Moon, not to the cycle of the artificial calendar months. We humans react to cosmic cycles, such as the 11-year sunspot cycle, but our reaction is not in sync with the sunspot cycle, so we do not notice.

> **[page 22] Anyone, of course, to whom we say that human life is a microcosm and imitates the macrocosm, is at liberty to reply. That is all nonsense! If we declare that certain illnesses show a seven day's fever period, one may object: Why then, when certain outer phenomena appear, does not the fever too make its appearance and run parallel, and cease with the external phenomena? It is true that the fever does not; but, though its temporal beginning and ending do not coincide with the outer phenomena, it still maintains their inner rhythm. This emancipation in the Cosmos is almost complete for human life; for animal life it is less so; plant life on the other hand, is still to a high degree immersed in the general life of Nature, including the outer earthly world.**

If we are navigating a space ship, we need to calculate using the heliocentric coordinates of the solar system, but if we are navigating our spirit or need to calculate the spiritual influences of our solar system, we need to use the geocentric coordinates(5) of the heavenly spaces surrounding us.

> **[page 23] The Earth is surrounded in the heavenly spaces, first by the Moon and then by the other planets of our planetary system. In an old instinctive science wherein the Sun was reckoned among the planets, they had this sequence: Moon, Mercury, Venus, Sun, Mars, Jupiter, Saturn. Without astronomical explanations I will now speak of this planetary life, and of that in the planetary life which is connected with the earthly world.**

Now we get down to the nitty-gritty of all plant life: the Earth, its composition and soil and how it directly affects the plants which live in it. There are two materials of immense importance to soil, limestone and quartz. Limestone contains calcium and carbon whereas quartz contains silicon.

> **[page 23] Turning our attention to the earthly life on a large scale, the first fact for us to take into account is this. The greatest imaginable part is played in this earthly life (considered once more on a large scale, and as a whole) by all that which we may call the life of the *silicious substance* in the world. You will find silicious substance for example, in the beautiful mineral quartz, enclosed in the form of a prism and pyramid; you will find the silicious substance, combined with oxygen, in the crystals of quartz. . . .**
>
> **Now we must not forget that the silicon which lives thus in the mineral quartz is spread over the Earth so as to constitute 27-28 % of our Earth's crust. All other substances are present in lesser quantities, save oxygen, which constitutes 47-48 %. Thus an enormous quantity of silicon is present. Now, it is true this silicon, occurring as it does in rocks like quartz, appears in such a form that it does not seem very important when we are considering the outer, material aspect of the Earth with its plant-growth. (The plant-growth is frequently forgotten).**
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> **Quartz is insoluble in water — the water trickles through it. It therefore seems — at first sight — to have very little to do with the ordinary, obvious conditions of life. But once again, you need only remember the horse-tail — *equisetum* — which contains 90 % of silica — the same substance that is in quartz — very finely distributed.**

What does silicon do for our plants in the soil? In the field horsetail, *equisetum arvense*, we see a plant which is almost all vertical construction, green hollow tubes, growing directly from the ground, up two to four feet in the air(6). Plants which can grow tall and skinny require silicon.

> **[page 24] Now what does this silicon do? In a hypothetical form, let us ask ourselves this question. Let us assume that we only had half as much silicon in our earthly**

environment. In that case our plants would all have more or less pyramidal forms. The flowers would all be stunted. Practically all plants would have the form of the cactus, which strikes us as abnormal. The cereals would look very queer indeed. Their stems would grow thick, even fleshy, as you went downward; the ears would be quite stunted — they would have no full ears at all.

What does limestone do for our plants in the soil? It provides a balance to the silicon effects that is needed to produce our plants. Without this balance we would have either the thin long-stemmed plants (silicious effect) or short, stunted, full-bodied cactus shapes (limestone effect).

[page 24] That on the one hand. On the other hand we find another kind of substance, which must occur everywhere throughout the Earth, albeit it is not so widespread as the silicious element. I mean the chalk or limestone substances and all that is akin to these — limestone, potash, sodium substances. Once more, if these were present to a less extent, we should have plants with very thin stems — plants, to a large extent, with twining stems; they would all become like creepers. The flowers would expand, it is true, but they would be useless: they would provide practically no nourishment. Plant-life in the form in which we see it today can only thrive in the equilibrium and co-operation of the two forces — or, to choose two typical substances, in the co-operation of the limestone and silicious substances respectively.

Next we must understand how the planets pour forces into the silicon materials and limestone materials in our soil. The planets beyond the Sun(7), the so-called distant planets, pour their forces selectively into the silicon materials of our soil. This concept will become very important later. To summarize what we have found so far: silicon makes plants tall and reedy; limestone makes them short and fat. The distant planets send their forces into the silicon in our soil; the near planets send their forces into the limestone in our soil.

[page 24] Everything that lives in the silicious nature contains forces which comes not from the Earth but from the so-called *distant planets,* the planets beyond the Sun — Mars, Jupiter and Saturn. That which proceeds from these distant planets influences the life of plants via the silicious and kindred substances into the plant and also into the animal life of the Earth. On the other hand, from all that is represented by the planets *near* the Earth — Moon, Mercury and Venus — forces work via the limestone and kindred substances. Thus we may say, for every tilled field: Therein are working the silicious and the limestone natures; in the former, Saturn, Jupiter and Mars; and in the latter, Moon, Venus and Mercury.

In other lectures, Steiner discussed how one particular seed from a plant may either be eaten for food or planted to produce another plant. It cannot do both! Consider this as a farmer. He needs to eat potatoes and also needs to keep potatoes for seeds to produce more potatoes. This applies to all plants: they can be used for reproduction or nourishment. In this next passage Steiner explains that the near planets affect reproduction and the distant planets affect nourishment. One easy way to remember that the near planets affect reproduction is recall how the nearest planet, our Moon, is deemed to be romantic, thus affecting human beings and indirectly leading them into matters which lead to reproduction.

[page 24, 25] Two things we must observe in the plant life. The first thing is that the entire plant-world, and every single species, is able to maintain itself — that is to say, it evolves the power of reproduction. The plant is able to bring forth its kind, and so on. That is the one thing. The other is, that as a creature of a comparatively lower kingdom of Nature, the plant can serve as nourishment for those of the higher kingdoms. . . .

Everything connected with the inner force of reproduction and growth — everything that contributes to the sequence of generation after generation in the plants — works

through those forces which come down from the Cosmos to the Earth: from Moon, Venus and Mercury, via the limestone nature. Suppose we were merely considering what emerges in plants such as we do not eat — plants that simply renew themselves again and again. We look at them as though the cosmic influences from the forces of Venus, Mercury and Moon did not interest us. For these are the forces involved in all that reproduces itself in the plant-nature of the Earth.

On the other hand, when plants become foodstuffs to a large extent — when they evolve in such a way that the substances in them become foodstuffs for animal and man, then Mars, Jupiter and Saturn, working via the silicious nature, are concerned in the process. The silicious nature opens the plant-being to the wide spaces of the Universe and awakens the senses of the plant-being in such a way as to receive from all quarters of the Universe the forces which are molded by these distant planets. Whenever this occurs, Mars, Jupiter and Saturn are playing their part. From the sphere of the Moon, Venus and Mercury, on the other hands, is received all that which makes the plant capable of reproduction.

Given the above information, we can ask how might we affect the life of our plants by enhancing the effects of the near or distant planets on them. When we reach the point of asking this question, we are ready to receive in useful ways the information of the rest of this agriculture course.

Most gardeners have heard that it's better to plant at certain phases of the Moon, but why would that make a difference? Old-time farmers knew what to do and had old sayings which guided them in planting in the proper relationship to the Moon and the amount of rain for the best effect on their crops.

[page 26] Water, in effect, is eminently suited to prepare the ways within the earthly domain for those forces which come, for instance, from the Moon. Water brings about the distribution of the lunar forces in the earthly realm. There is a definite connection between the Moon and the water in the Earth. Let us therefore assume that there have just been rainy days and that these are followed by a full Moon. In deed and in truth, with the forces that come from the Moon on days of the full Moon, something colossal is taking place on Earth. These forces spring up and shoot into all the growth of plants, but they are unable to do so unless rainy days have gone before.

We shall therefore have to consider the question: Is it not of some significance, whether we sow the seed in a certain relation to the rainfall and the subsequent light of the full Moon, or whether we sow it thoughtlessly at any time? Something, no doubt, will come of it even then. Nevertheless, we have to raise this question: How should we best consider the rainfall and the full Moon in choosing the time to sow the seed? For in certain plants, what the full Moon has to do will thrive intensely after rainy days and will take place but feebly and sparingly after days of sunshine.

Which condition on Earth bears the same relationship to the distant planets which water bears to the nearest planet, the Moon? That condition is warmth. The near planets with their short orbits affect the plants we call annuals, whose life cycle is only one year. Those plants, such as trees, that live for many years, are affected by the distant planets and we must take the location of Mars, Jupiter, and Saturn into effect when planting them, to achieve the best results.

[page 26] Furthermore, around our Earth is the atmosphere. Now the atmosphere above all — beside the obvious fact that it is airy — has the peculiarity that it is sometimes warmer, sometimes cooler. At certain times it shows a considerable accumulation of warmth, which, when the tension grows too strong, may even find relief in thunderstorms. How is it then with the *warmth?* Spiritual observation shows that whereas the water has no relation to *silica,* this warmth has an exceedingly strong relation to it.

The warmth brings out and makes effective precisely those forces which can work

> **through the silicious nature, namely, the forces that proceed from Saturn, Jupiter and Mars.**
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> **[page 27] If someone wishes to plant an oak, it is of no little importance whether or no he has a good knowledge of the periods of Mars; for an oak, rightly planted in the proper Mars-period, will thrive differently from one that is planted in the Earth thoughtlessly, just when it happens to suit.**

Imagine for the purpose of rightly understanding plant growth that the entire Earth is a kind of organism whose surface is a diaphragm, like the human diaphragm which separates the processes of breathing and circulation from the organs of digestion. Only, in this analogy, one must invert the organs of the organism so that as we are living above the ground, we are in effect below the diaphragm of this organism, essentially inside the region of its digestive organisms. "Whatever is *above* the Earth, belongs in truth to the intestines of the "agricultural individuality", Steiner tells us.

> **[page 30] Why do I say that the agricultural individuality is standing on its head? For the following reason. Take everything there is in the immediate neighborhood of the Earth by way of air and water vapors and even warmth. Consider, once more, all that element in the neighborhood of the Earth in which we ourselves are living and breathing and from which the plants, along with us, receive their outer warmth and air, and even water. All this actually corresponds to that which would represent, in man, the abdominal organs. On the other hand, that which takes place in the interior of the Earth — beneath the Earth's surface — works upon plant-growth in the same way in which our head works upon the rest of our organism, notably in childhood, but also throughout our life. There is a constant and living mutual interplay of the above-the-Earth and the below-the-Earth.**

It is beyond the scope of this review to explain how the human head works upon the rest of the human body, but Steiner has already covered that subject in other lectures and books. Why do we need this analogy? Because the way the cosmos interacts with plants changes at the surface of the Earth; what is above the diaphragm (surface) is influenced by the near planets (Moon, Mercury, Venus) and what is below the diaphragm is influenced by the distant planets (Mars, Jupiter, Saturn). "Thus, so far as plant-growth is concerned, we must look for the influences of the distant Heavens *beneath*, and of the Earth's immediate cosmic environment *above* the Earth's surface," he tells us and continues below. See Diagram 2.

> **[page 31] Once more: all that works inward from the far spaces of the Cosmos to influence the growth of plants, works not directly — not by direct radiation — but in this way: It is first received by the Earth, and the Earth then rays it upward again. Thus, the influences that rise upward from the earthly soil — beneficial or harmful for the growth of plants — are in reality cosmic influences rayed back again and working directly in the air and water over the Earth. The direct radiation from the Cosmos is stored up beneath the Earth's surface and works back from thence. Now these relationships determine how the earthly soil, according to its constitution, works upon the growth of plants.**

Next we must consider the importance of limestone materials and clay in our soils. The mere presence of sand and rock under the Earth far below where roots reach would be considered unimportant to modern horticulturists, but they are essential to the plants which grow far above for the reasons Steiner gives below. As I hinted earlier, if this is difficult for you to take, you have only two choices: suspend your beliefs temporarily and continue to read on where everything will be explained, or stop reading now and take your present beliefs intact away with you(8).

> **[page 31] Consider the earthly soil. To begin with, we have those influences that depend**

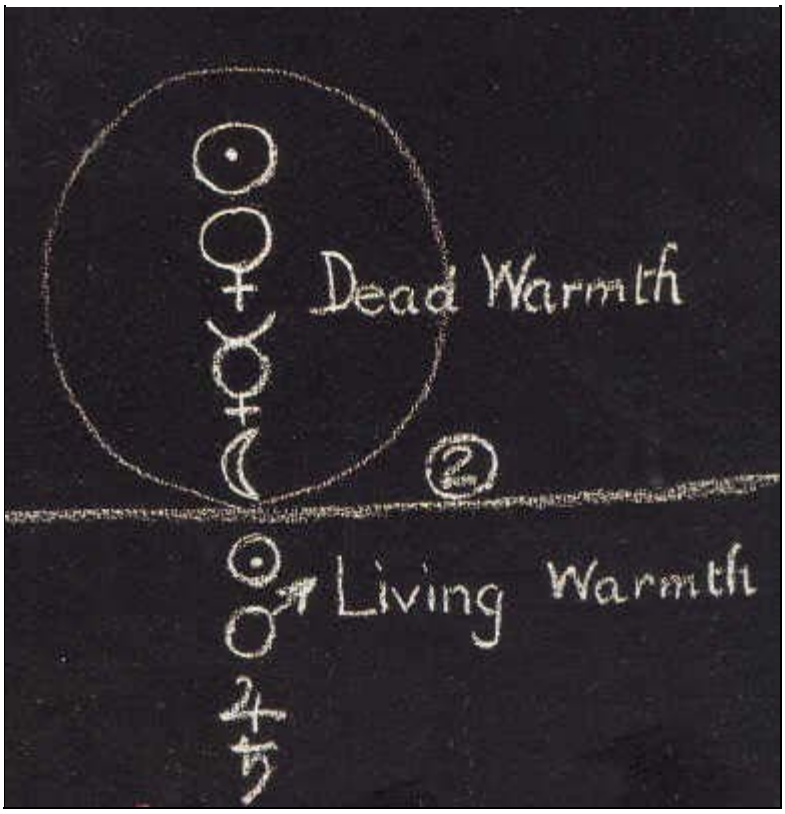
> **on the farthest distances of the Cosmos — the farthest that come into account for earthly processes. These effects are found in what is commonly called sand and rock and stone. Sand and rock — substances impermeable to water, which, in the common phrase, "contain no foodstuffs" — are in reality no less important than any other factors. They are most important for the unfolding of the growth-processes, and they depend throughout on the influences of the most distant cosmic forces. And above all — improbable as it appears at first sight — it is through the sand, with its *silicious* content, that there comes into the Earth what we may call the *life-ethereal* and the *chemically* influential elements of the soil. These influences then take effect as they ray upward again from the Earth.**

Diagram 2 shows the distant planets above and below the ground (Symbols from ground up are: Moon, Mercury, Venus and Sun, from ground down, Sun, Mars, Jupiter, and Saturn). The Sun's influence extends both above and below ground. The silicon substances which comprise almost 50% of the Earth's surface provide the life-ethereal or etheric forces required by plants everywhere. But for these forces to be carried up into the living plants there must be some clayey or silicious soil to carry the cosmic forces upward into the plants. (Remember the *belly* is above ground.)

> **[page 32] But this up-streaming of the cosmic influences is not all. There is also the other process which I may call the terrestrial or earthly — that process which is going on in the "belly" and which depends on a kind of external "digestion." For plant-growth, in effect, all that goes on through summer and winter in the air above the Earth is essentially a kind of digestive process, must in its turn be drawn downward into the soil. Thus a true mutual interaction will arise with all the forces and fine homeopathic substances which are engendered by the water and air above the Earth. All this is drawn down into the soil by the greater or lesser *limestone* content of the soil. The limestone content of the soil itself, and the distribution of limestone substances in homeopathic dilution immediately above the soil — all this is there to carry into the soil the immediate terrestrial process.**

What does any of this have to do with real science? you may be thinking. If so, then by "real science" you mean materialistic science which specifically and proudly ignores the influence of forces it cannot measure with its man-made instruments. But Man is an instrument who can understand and measure these forces and Rudolf Steiner was a man who knew how to do this in his own time. The rest of us will have to wait for this to become a common human ability, but that time will come. Till then one can consider and perhaps come to understand rightly that hard scientists live in the clouds of abstract logic and dead thinking.

> **[page 32, 33] In due time there will be a science of these things — not the mere scientific jargon of today — and it will then be possible to give exact indications. It will be known, for instance, that there is a very great difference between the warmth that is above the Earth's surface — that is to say, the warmth that is in the domain of Sun, Venus, Mercury and Moon — and that warmth which makes itself felt within the Earth;**



which is under the influence of Mars, Jupiter and Saturn. For the plant, we may describe the one kind as leaf-and-flower warmth, and the other as root warmth. These two warmths are essentially different, and in this sense, we may well call the warmth above the Earth dead, and that beneath the Earth's surface living(9).

How does this warmth proceed into living plants? It requires the limestone quality of the soil to be present for the warmth drawn into the ground to acquire a condition of vitality needed by the plants in the soil. That is why the warmth beneath the ground is called living warmth. It is the type of warmth a living human being emits which quickly fades away at death. Note that of the four elements, *water* and *earth* become more dead under the ground, while *air* and *warmth* become more alive. Steiner explains why this is necessary.

[page 33] So it is both with the warmth and with the air; they take on a slightly living quality when they are received into the Earth. The opposite is true of the water and of the solid earthy element itself. They become still more dead inside the Earth than they are outside it. They lose something of their external life. Yet in this very process they become open to receive the most distant cosmic forces.

The mineral substances must emancipate themselves from what is working immediately above the surface of the Earth, if they wish to be exposed to the most distant cosmic forces. And in our cosmic age they can most easily do so — they can most easily emancipate themselves from the Earth's immediate neighborhood and come under the influence of the most distant cosmic forces down inside the Earth — in the time between the 15th January and the 15th February; in this winter season. The time will come when such things are recognized as exact indications. This is the season when the strongest formative-forces of crystallization, the strongest forces of form, can be developed for the mineral substances within the Earth. It is in the middle of the winter. The interior of the Earth then has the property of being least dependent on itself — on its own mineral masses; it comes under the influence of the crystal-forming forces that are there in the wide spaces of the Cosmos.

What practicality has all this for agriculture? We can note that in the late Fall, we may need to add some clay to our soil to ready it for the next growing season.

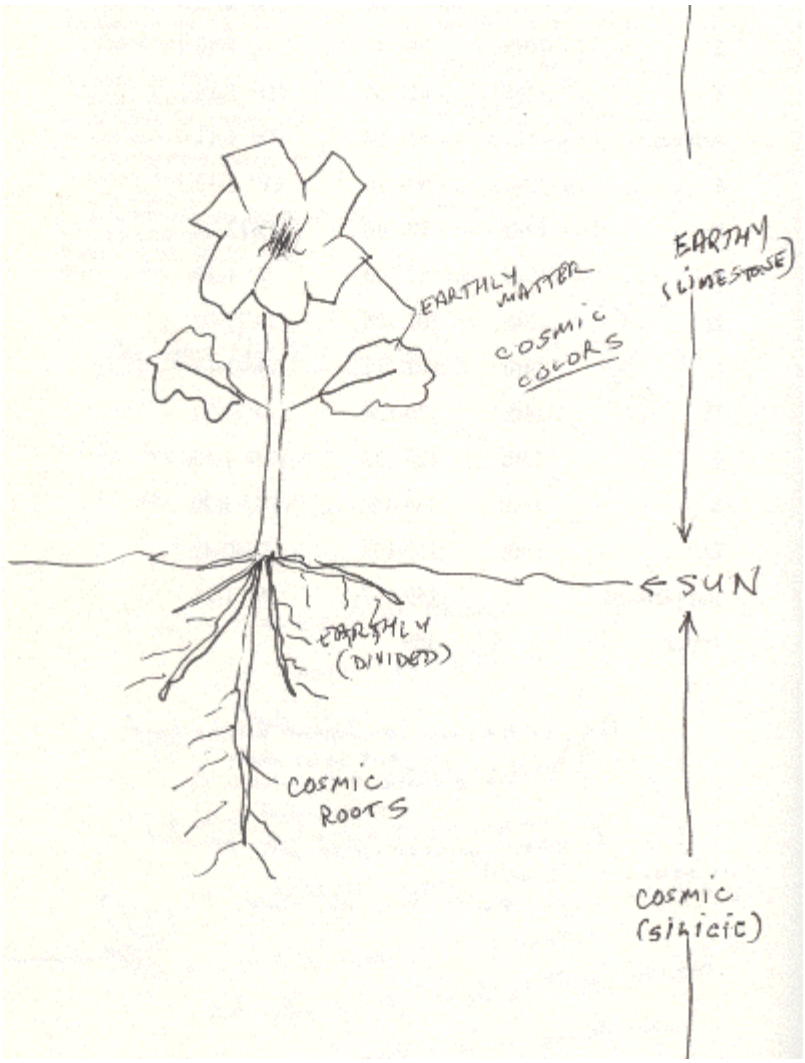
> **[page 34] Thus we may say, approximately in the month of November-December, there is a point of time when that which is under the surface of the Earth becomes especially effective for plant-growth. The practical question is: "How can we really make use of this for the growth of plants?" The time will come when it is recognized, how very important it is to make use of these facts, so as to be able to direct the growth of plants. I will observe at once, if we are dealing with a soil which does not readily or of its own accord carry upward the influences which should be working upward in this winter season, then it is well to add a dose of clay to the soil. (I shall indicate the proper dose later on). We thereby prepare the soil to carry upward what, to begin with, is inside the Earth and make it effective for the growth of plants. I mean, the crystaline forces which we observe already when we look out over the crystalizing snow. (The force of crystalization, however, grows stronger and more intense the farther we go into the interior of the Earth). This crystalizing force must therefore be carried upward at a time when it has not yet reached its culminating point — which it will only attain in January or February.**

The color of the leaves derive from Sun forces, but the flowers and fruit bear the colors of the distant planets in them, and owe their fragrances and flavors to those planets. "In the apple you are eating Jupiter, in the plum you are actually eating Saturn." (Page 39)(10)

> **[page 36, 37] The green leaves, in their form and thickness and in their greenness too, carry an earthly element, but they would not be green unless the cosmic force of the Sun were also living in them. And even more so when you come to the colored flower; therein are living not only the cosmic forces of the Sun, but also the supplementary forces which the Sun-forces receive from the distant planets — Mars, Jupiter and Saturn. In this way we must look at all plant growth. Then, when we contemplate the rose, in its red color we shall see the forces of Mars. Or when we look at the yellow sunflower — it is not quite rightly so called, it is called so on account of its form; as to its yellowness it should really be named the Jupiter-flower. For the force of Jupiter, supplementing the cosmic force of the Sun, brings forth the white or yellow color in the flowers. And when we approach the chicory (*Cichorium lntybus*), we shall divine in the bluish color the influence of Saturn, supplementing that of the Sun. Thus we can recognize Mars in the red flower, Jupiter in the yellow or white, Saturn in the blue, while in the green leaf we see essentially the Sun itself. But that which thus shines out in the coloring of the flower works as a force most strongly in the root. For the forces that live and abound in the distant planets are working, as we have seen, down there below within the earthly soil.**

Yesterday while working on this review, I looked up *equisetum* or horsetail which Steiner discusses in this next passage. I discovered that the "dinosaur grass," as I called it, is actually *equisetum arvense* or the common field horsetail grass and is full of silicon, 90%, and a tea made with its stems will prevent mold, mildew, etc, such as beset our crepe myrtles annually at the Roadhouse (Steiner explains this later in this course). And for 3 years I searched for this plant that I remembered fondly from my youth as being everywhere and was no where to be found, especially difficult as I did not have a name for it. I had no idea why I wanted to find it, but I did — only now do I know why I was searching for it! I was going to need to have a supply of it to apply what I am learning in this agriculture course.

> **[page 37, 38] Assume that by some means we cause the cosmic to be strongly retained — held up within the plant itself. Then it will not reveal itself to any great extent. It will not shoot out into blossom but will express itself in a stalk-like nature. Where, now, according to**



the indications we have given, does the cosmic nature live in the plant? It lives in the silicious element.

Look at the equisetum plant. It has this peculiarity: it draws the cosmic nature to itself; it permeates itself with the silicious nature. It contains no less than 90% of silicic acid. In equisetum the cosmic is present, so to speak, in very great excess, yet in such a way that it does not go upward and reveal itself in the flower but betrays its presence in the growth of the lower parts.

How do we ensure that we have right mixture in the natural manure we use for our plants? It is a simple matter of having an appropriate number of cows, horses, pigs, etc. on our farm and then the mixture from using only their manure will be exactly right. Steiner points out that the best combination of plant and animal life takes place where Nature is on Her own, without the so-called help of Man.

[page 39, 40] Now the plant-growth of the Earth is not all. To any given district of the Earth a specific animal life also belongs. For reasons which will presently be evident, we may for the moment leave man out, but we cannot neglect animal life. For this is the peculiar fact; the best — if I may call it so — cosmic qualitative analysis takes place of its own accord, in the life of a certain district of the Earth, overgrown as it is with plants, along with the animals in the same region. This is the peculiar fact — and I should be glad if my statements were tested, for if you subsequently test them you will certainly find them confirmed. This is the peculiar relation. If in any farm you have the right amount of horses, cows and other animals, these animals taken together will give just the amount of manure which you need for the farm itself . . .

One can begin to see the greatest problem with so-called modern agriculture is that farms have been scaled up into huge factories and the right amount of animals no longer exists on any mega-farm, so artificial manures — one-sided chemical fertilizers — are pressed into service with all the attendant ills such as lack of nutrition, susceptibility to so-called plant diseases and insect pests, all of which requires additional chemical fungicides and pesticides, causing a decreasing quality of nutrition in exchange for an increasing cost of production! The result is that humans are induced into eating crops grown far distant from their own homes, plants which have no chance to adapt to the protein needs of the person eating the food(11).

[page 40] Nay more, if you have the right number of cows, horses, pigs, etc., *severally*, the

proportion of admixture in the manure will also be correct. This is due to the fact that the animals will eat the right measure of what is provided for them by the growth of plants. They eat the right quantity of what the Earth is able to provide. Hence in the course of their organic processes they bring forth just the amount of manure which needs to be given back again to the Earth.

This therefore is the case. We cannot carry it out absolutely, but in the ideal sense it is correct. If we are obliged to import any manure from outside the farm, properly speaking we should only use it as a remedy — as a medicament for a farm that has already grown ill. The farm is only healthy inasmuch as it provides its own manure from its own stock. Naturally, this will necessitate our developing a proper science of the number of animals of a given sort which we need for a given kind of farm. This need not cause any alarm. Such a science will arise in good time, as soon as we begin to have any knowledge again of the inner forces concerned.

Look at Diagram 5 and you will see Steiner's sketch of how the Sun affects the fore portion of the animal up to its heart region and the Moon affects its rear portion. The distant planets are active in the fore portion and the near planets in the rear portion. Stick the animal in your imagination in the ground up to its fore portion and you have the alignment of planets of the Earth organism discussed earlier and drawn out in Diagram 2 above. Why is this important?

[page 41] This will enable you to discover, from the form and figure of the animal, a definite relation between the manure, for example, which this animal provides, and the needs of the particular portion of the Earth, the plants of which the animal is eating. For you must know these things. You must know, for instance, that the cosmic influences which are effective in a plant rise upward from the interior of the Earth. They are led upward. Suppose a plant is especially rich in such cosmic influences. The animal which eats the plant will in its turn provide manure, out of its whole organism, on the basis of this fodder. Thereby it will provide the very manure which is most suited for the soil on which the plant is growing. Thus if you can read Nature's language of forms, you will perceive all that is needed by the "self-contained individuality" which a true farm or agricultural unit should be. Only the animal stock must also be included in it.

The five bearers of life form the German word for beautiful: SCHÖN, namely Sulfur, Carbon, Hydrogen, Oxygen, and Nitrogen. Steiner tells us the origin of the word sulphur, coined in a time when humans could still see the spiritual world and light-bearing qualities of sulphurous and phosphorus. The "phorus" come from the same root as "ferry" which means to bear across.

[page 42, 43] Truly, we may say, whoever would trace the tracks which the Spiritual marks out in the material world, must follow the activity of sulphur. Though this activity appears less obvious than that of other substances, nevertheless it is of great importance; for it is along the paths of sulphur that the Spiritual works into the physical domain of Nature. Sulphur is actually the carrier of the Spiritual. Hence the ancient name, "*sulphur,*" which is closely akin to the name "*phosphorus.*" The name is due to the fact that in olden time they recognized in the out-spreading sun-filled light, the Spiritual

> **itself as it spreads far and wide. Therefore they named "light-bearers" these substances — like sulphur and phosphorus — which have to do with the working of light into matter.**

What is the "Philosopher's Stone" which recently obtained notoriety in the first Harry Potter book? Steiner reveals it to be the element "Carbon" which everyone is familiar with, but which in ancient times was held as a very tight secret because of the amazing modifications the ancient alchemists could make from it which it was deemed necessary to keep from public understanding and likely misuse. Carbon's secrets were guarded back then like we guard the hydrogen bomb secrets today.

> **[page 44] Carbon, in effect, is the bearer of all the creatively formative processes in Nature. Whatever in Nature is formed and shaped — be it the form of the plant persisting for a comparatively short time, or the eternally changing configuration of the animal body — carbon is everywhere the great plastician. It does not only carry in itself its black substantiality. Wherever we find it in full action and inner mobility, it bears within it the creative and formative cosmic pictures — the sublime cosmic Imaginations, out of which all that is formed in Nature must ultimately proceed.**

Carbon becomes the carrier of the ethereal world in Nature. Want to see evidence of the ethereal world? Look at a child. I saw a young boy about five in a doctor's waiting room. His mother was busy at the counter and the boy never kept still for a second. He rotated around the open room in a counterclockwise fashion, looking at one thing then another, never pausing, but moving constantly. As I watched his rotations, I wondered if he ever might go in the opposite direction. He never did. Time and again he moved around the inside of the room looking everywhere, never tiring of looking or moving. One dozen, two dozen or more orbits of the room, never jading, always seeing the room anew, till I began to understand that his motion was the reason for his movement and his looking was merely a by-product of the never-ceasing motion. His strong etheric body kept him in motion; it is what the etheric body does: move without ceasing. Adults can experience their etheric body when lost in a forest: they will move in circles unless they force themselves to use a compass or other distant landmarks. A circle is the most natural motion a human can make because our etheric body loves circles, thus our love for dancing. Carbon attracts the etheric body and allows it to move while remaining attached to the physical world of our flesh and bones.

> **[page 45] This, after all, is the peculiarity of all that we have on Earth: the Spiritual here must always have physical carriers. Then the materialists come, and take only the physical carrier into account, forgetting the Spiritual which it carries. And they are always in the right — for the first thing that meets us *is* the physical carrier. They only leave out of account that it is the *Spiritual* which must have a physical carrier everywhere.**

The substances sulphur and carbon need oxygen, coming right after hydrogen in the SCHÖN pentacle of life, to carry them throughout our physical body. "This physical element which with the help of sulphur carries the influences of life out of the universal ether into the physical, is none other than *oxygen*. . . . For the ethereal moves with the help of sulphur along the paths of oxygen." But the oxygen known by physicists is not living oxygen, that is, oxygen in close contact and part of living processes, no, the oxygen of physicists is the raw and quite dead element of oxygen and thus physicists can know nothing of living oxygen.

> **[page 46] Circulating inside us, the oxygen is not the same as it is where it surrounds us externally. Within us, it is living oxygen, and in like manner it becomes living oxygen the moment it passes, from the atmosphere we breathe, into the soil of the Earth. Albeit it is not so highly living there as it is in us and in the animals, nevertheless, there too it becomes living oxygen. Oxygen under the earth is not the same as oxygen above the earth.**

> **It is difficult to come to an understanding on these matters with the physicists and chemists, for — by the methods they apply — from the very outset the oxygen must always be drawn out of the earth realm; hence they can only have dead oxygen before them. There is no other possibility for them. That is the fate of every science that only considers the physical. It can only understand the corpse. In reality, oxygen is the bearer of the living ether, and the living ether holds sway in it by using sulphur as its way of access.**

There are three elements which fill and are most closely associated with our three basic human bodies as follows: physical body-carbon, etheric body-oxygen, and astral body-nitrogen. It is fascinating to watch Steiner describe how these elements work together in our living bodies.

> **[page 46, 47] Observe the human process: we have the breathing before us — the living oxygen as it occurs inside the human being, the living oxygen carrying the ether. And in the background we have the carbon-framework, which in the human being is in perpetual movement. These two must come together. The oxygen must somehow find its way along the paths mapped out by the framework. Wherever any line, or the like, is drawn by the carbon — by the spirit of the carbon — whether in man or anywhere in Nature there the ethereal oxygen-principle must somehow find its way. It must find access to the spiritual carbon-principle. How does it do so? Where is the mediator in this process?**

Notice how these elements are treated as spiritual principles, because in the beginning spirits infused these elements to coordinate their activities and that coordination is present, observable to spiritual sight, and responsible for me being alive to write these words and you, dear Reader, being alive to read them. The mediator is nitrogen as the agent of astrality. What is it that nitrogen does as the agent of astrality?

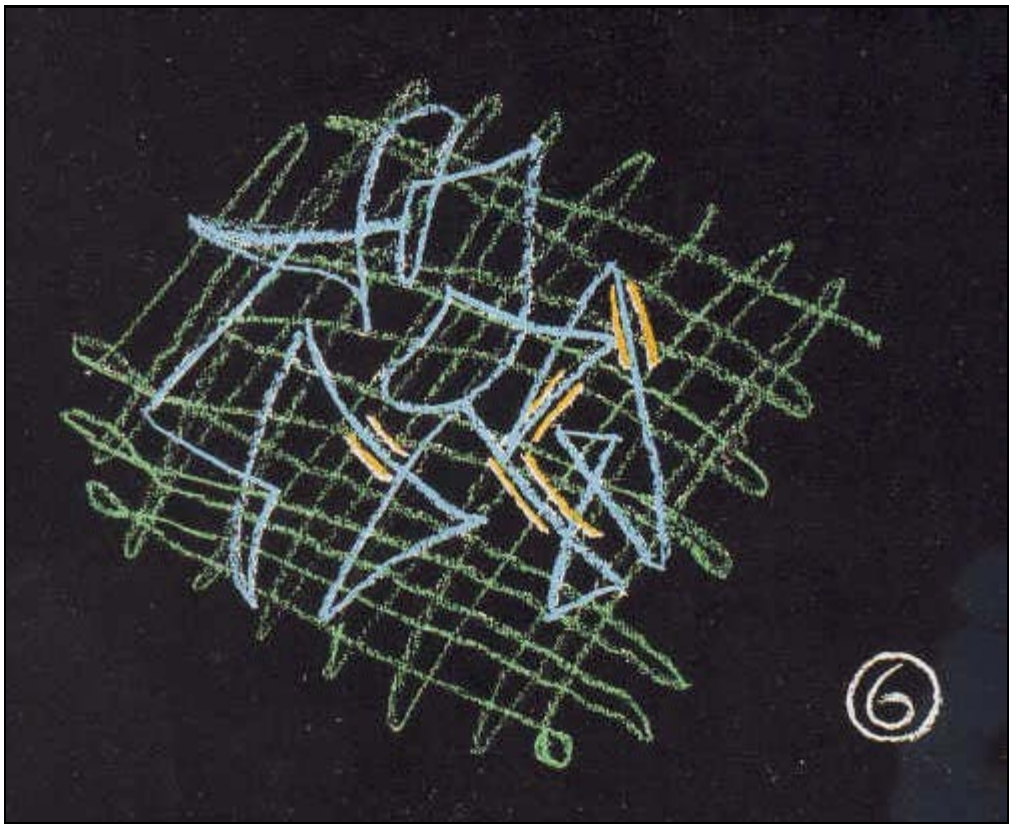
> **[page 47] The mediator is none other than nitrogen. Nitrogen guides the life into the form or configuration which is embodied in the carbon. Wherever nitrogen occurs, its task is to mediate between the life and the spiritual essence which to begin with is in the carbon-nature. Everywhere — in the animal kingdom and in the plant and even in the Earth — the bridge between carbon and oxygen is built by nitrogen. And the spirituality which — once again with the help of sulphur — is working thus in nitrogen, is that which we are wont to describe as the astral. It is the astral spirituality in the human astral body. It is the astral spirituality in the Earth's environment. For as you know, there too the astral is working — in the life of plants and animals, and so on.**

Plants cannot exist without animals or humans about because plants have no astral body, only a physical and etheric body. What's the big deal about having animals and humans around for plants? Plants don't have an astral body, so why would they need beings who do have them around? Remember the birds and the bees? They are essential to the reproduction of plants. "Sure, for pollination, I know that", you may be thinking, but it is not the pollination that birds, bees, and humans provide to plants that is essential(12), rather it is their astral bodies which flow into the reproductive organs of plants and allows them to reproduce. Thus the astral works in a crucial way in plants, especially around its flowers which contain the sexual organs of plants.

> **[page 47] Thus, spiritually speaking we have the astral placed between the oxygen and the carbon, and this astral impresses itself upon the physical by making use of nitrogen. Nitrogen enables it to work physically. Wherever nitrogen is, thither the astral extends. The ethereal principle of life would flow away everywhere like a cloud, it would take no account of the carbon-framework were it not for the nitrogen. The nitrogen has an immense power of attraction for the carbon-framework. Wherever the lines are traced and the paths mapped out in the carbon, thither the nitrogen carries the oxygen —**

thither the astral in the nitrogen drags the ethereal.

Steiner drew a diagram with colored chalk on a blackboard and this book contains a dozen or so of these drawings. His words in German have been converted into English, but they are otherwise unchanged. Observe Drawing 6 as you read the next passage.



[page 49, 50] To begin with, we have what I sketched before in blue (Diagram 6), the carbon-framework. Then there is that which you see here in the green — the ethereal, oxygen principle. And then — everywhere emerging from the oxygen, carried by nitrogen to all these lines — there is that which develops as the astral, as the transition between the carbonaceous and the oxygen principle. I could show you everywhere, how the nitrogen carries into these blue lines what is indicated diagrammatically in the green.

Who owns a garden who does not meditate? In the planning stage, in the walk through a garden center, in the choice of location to place plants newly acquired, in the daily walks through the garden to admire the plants and check on their progress — are not all those activities filled with meditation? Plus the long winter months in some locales when the garden may be months away. It is this type of meditation which prompts me to mow my own lawns — the hour or so I spend takes me over every patch of lawn, praying over every patch of ground and examining them to spot any developing problems and to correct them while they are still minor.

[page 51, 52] Nay more! I cannot repeat what I said here an hour ago, but in another way I may perhaps characterize it again. Think of a simple peasant-farmer, one whom your scholar will certainly not deem to be a learned man. There he is, walking out over his fields. The peasant is stupid — so the learned man will say. But in reality it is not true, for the simple reason that the peasant — forgive me, but it is so — is himself a meditator. Oh, it is very much that he meditates in the long winter nights! He does indeed acquire a kind of method — a method of spiritual perception. Only he cannot express it. It suddenly emerges in him. We go through the fields, and all of a sudden the knowledge is there in us. We know it absolutely. Afterwards we put it to the test and find it confirmed. I in my youth, at least, when I lived among the peasant folk, could witness this again and again. It really is so, and from such things as these we must take our start once more. The merely intellectual life is not sufficient — it can never lead into these depths. We must begin again from such things. After all, the weaving life of Nature

is very fine and delicate. We cannot sense it — it eludes our coarse-grained intellectual conceptions. Such is the mistake science has made in recent times. With coarse-grained, wide-meshed intellectual conceptions it tries to apprehend things that are far more finely woven.

Have you heard about the nitrogen gathering nodules which various legumes (pea and bean plants) have at their base? Steiner likens these to nitrogen breathing membranes similar to the oxygen breathing ones we humans have in our lungs. Often these plants are grown in fields which are nitrogen-depleted to refresh the soil.

[page 53] If we have any feeling or receptivity for these things, we can observe the process most wonderfully in the *papilionaceae* or *leguminosae* — in all those plants which are well known in farming as the nitrogen-collectors. They indeed have the function of drawing in the nitrogen, so to communicate it to that which is beneath them. Observe these leguminosae. We may truly say, down there in the Earth something is athirst for nitrogen; something is there that needs it, even like the lung of man needs oxygen. It is the limestone principle. Truly we may say, the limestone in the Earth is dependent on a kind of *nitrogen-inbreathing*, even as the human lung depends on the inbreathing of oxygen. These plants — the papilionaceae — represent something not unlike what takes place on our epithelial cells. By a kind of inbreathing process it finds its way down there.

Earlier we read how silicious material creates tall reedy structures in plants and limestone leads to short dumpy structures. One can envision a battle going on in the soil between the two forces of silicon and limestone which results in the various plants forms we encounter. Steiner cleverly personifies the battle for us.

[page 55] These things we ought at length to see quite clearly; then we shall gain a kind of sensitive cognition. Once more we ought to feel the chalk or limestone as the kernel-of-desire. Limestone is the fellow who would like to snatch at everything for himself. Silica, on the other hand, we should feel as the very superior gentleman who wrests away all that can be wrested from the clutches of the limestone, carries it into the atmosphere, and so unfolds the forms, of plants. This aristocratic gentleman, silica, lives either in the ramparts of his castle — as in the equisetum plant — or else distributed in very fine degree, sometimes indeed in highly homeopathic doses. And he contrives to tear away what *must* be torn away from the limestone.

Here once more you see how we encounter Nature's most wonderfully intimate workings. Carbon is the true form-creator in all plants; carbon it is that forms the framework or scaffolding. But in the course of earthly evolution this was made difficult for carbon. It *could* indeed form the plants if it only had water beneath it. Then it would be equal to the task. But now the limestone is there beneath it, and the limestone disturbs it. Therefore it allies itself to silica. Silica and carbon together — in union with clay, once more — create the forms. They do so in alliance because the resistance of the limestone-nature must be overcome.

It is useful at this point to ask, "What does all this mean?" All this limestone and silicon fighting each other, nitrogen-breathing, near and distant planets, dead and live warmth, etc, what does this have to do with agriculture? Steiner gives the answer in a simple metaphor of a baby and a comb.

[page 67] For all the different spheres of farming life we must gain insight into the working of the substances and forces, and of the Spiritual too. Such insight is necessary, so as to treat things in the right way. After all, a baby — so long as it does not know what a comb is for — will merely bite into it, treating it in an impossible and style-less fashion. We too shall treat things in an impossible and style-less fashion, so long as we do not know what their true essence is . . .

The body of this course is learning about the true essence of things agriculture so that we may operate on them in a suitable manner. Take your favorite tree and do this now. Imagine rich soil somehow piled into the shape of that tree. Got it? Now imagine that the tips of the tree which have been dormant over winter reach to the surface of this soil. Each tip becomes a sprout of new growth above the soil of your tree-mound and from these sprouts will come living plants into view which will culminate in flowers, fruit (or nuts), and seeds. In this imaginative view, you can see that trees are like pre-planted annual plants which arise from its especially prepared "earthen-mound". Most trees only grow fruit and nuts on this new growth. This fact was recently impressed on me by the LSU fig tree on the grounds of our new home. It was producing figs last November whereas the Celeste fig trees, with which I was most familiar, only produced figs in July. It is now July and for a week I have been picking figs on this LSU fig tree again. This hybrid fig tree produces a *breba* crop, a second crop which appears on the old growth from the previous year! The figs I am picking now are forming on the brown stems which were green the previous year — this is what *breba* crop means. Meanwhile on the green branches forming past the brown ones, tiny green figs are forming which will ripen in November. In our mound-analogy, the breba crop, as it were, grows below the soil-boundary.

In this next metaphor, Steiner has us imagine a tree as a mound of earthen soil in order for us to understand how a tree forms. How the interior and the tips of tree contain living material from which the new growth can proceed.

[page 67, 68] Consider a tree for example. A tree is different from an ordinary annual, which remains at the merely herbaceous stage. A tree surrounds itself with rind and bark, etc. What is the essence of the tree, by contrast to the annual? Let us compare such a tree with a little mound of earth which has been cast up, and which — we will assume — is very rich in humus, contains an unusual amount of vegetable matter more less in process of decomposition, and perhaps of animal decomposition-products too. (Diagram 7).

Let us assume: this is the hillock of earth, rich in humus. And I will now make a hollow in it, like a crater. And let this (in the drawing to the right) be the tree: outside, the more or less solid parts, while *inside* is growing what leads eventually to the formation of the tree as a whole. It may seem strange to you that I put these two things side by side. But they are more nearly related than you would think.

In effect, earthly matter — permeated, as I have now described it, by humus-substances in process of decomposition — such earthly matter contains etherically living substance. Now this is the important point: Earthly matter, which by its special constitution reveals the presence in it of etherically living substance, is always on the way to become plant-integument (bark). . . .

The actual life is continued, especially from the roots of the plant, into the surrounding soil. For many plant there is absolutely no hard and fast line between the life within the plant and the life of the surrounding soil in which it is living.

To manure the soil is to bring it alive otherwise we place our plants into a dead soil and it struggles mightily to bring itself to life out of its own vitality, often dying in the process. If we wish to bring our soil alive, we must add manure which contains some amount of livingness which will bring the soil alive. If you use pure mineral substance as manure, so-called chemical fertilizers like ammonium nitrate(13), you will achieve fast growth and a healthy-looking greenness of the plants, but it is a one-sided health.

> **[page 70] If you use mineral, purely mineral substances as manure, you will never get the real earthly element; you will penetrate at most to the watery element of the earth. With *mineral manures* you can influence the *watery* content of the earth, but you do not penetrate sufficiently to bring to life the earth-element itself. Plants, therefore, which stand under the influence of mineral manures will have a kind of growth which betrays the fact that it is supported only by a quickened watery substance, not by a quickened earthy substance.**

Cows are sedentary creatures and deer are quick and nervous creatures. Steiner explains how the shape of horns on cows and antlers on deer correspond to their nature.

> **[page 72] What happens at the places where the horns grow and the hoofs? A locality is formed which sends the currents *inward* with more than usual intensity. In this locality the outer is strongly shut off; there is no communication through a permeable skin or hair. The openings which other wise allow the currents to pass outward are completely closed. . . .**
>
> **With the forming of *antlers* it is altogether different. Here the point is, not that streams are carried back into the organism, but on the contrary, that certain streams are carried a certain way outward. There are valves, so to speak, whereby certain streams and current are discharged outwardly. Such streams need not always be liquid or aeriform; they may also be current of *forces,* localized in the antlers. The stag is beautiful because it has an intense communication with the surrounding world, inasmuch as it sends certain of its currents outward, and *lives* with its environment, there receiving all that works organically in the nerves and senses. So it becomes a quick and nervous animal. In a certain respect, all animals possessing antlers are filled with a gentle nervousness and quickness. We see it in their eyes.**

Steiner is laying the groundwork for describing the various preparations which form the basis of his bio-dynamic gardening which involve, among other things, placing materials in a cow horn and setting it underground for a portion of a year. Into the horn will go, among other things, cow dung. What does this dung contain and why do we apply it as manure to our soil?

> **[page 73] Imagine now: we take this mass (manure) and give it over to the earth, in one form or another. What we are actually doing is to give the earth something ethereal and astral which has its existence by rights, inside the belly of the animal and there engenders forces of a plant-like nature. For the forces we engender in our digestive tract are of a *plant-like* nature. We ought to be very thankful that the dung remains over at all; for it carries the astral and ethereal contents from the interior of the organs, out into the open. The astral and ethereal adheres to it. We only have to preserve it and use it in the proper way.**

PREPARATIONS for BIO-DYNAMIC GARDENING

I have been using Preparations 502 through 507 in treating our gardens for almost ten years and the results have far exceeded my expectations. In the past two years, I expanded our garden to include a patch for growing vegetables. Before then it was mostly citrus trees which we ate from. My navel oranges and grapefruit were filled with fruit and we drank some grapefruit juice from November till September, almost year round simply by leaving the grapefruit on the tree till we needed some more juice. The juice would

only last about two weeks in the fridge, so I squeezed only enough for about a week-or-so's consumption at a time. Here for the first time I encountered Steiner's original instructions for these preparations. I bought the separate preparations of 502 to 507 and treated my mulch bed with them. The next year I located some barrel compost, 509, which has all of these plus the 508 equisetum preparation already mixed together. It is much easier to use and can be applied directly to all the plants: the gardens, lawns, and bushes by sprinkling. The barrel compost comes looking like loose peat moss, no smell, and a small amount is dumped into a barrel of rainwater and the water is stirred for an hour, spinning rapidly to create a deep vortex in the water, for ten minutes in a clockwise direction, and then ten in the opposite direction. The application is done after nightfall.

PREPARATION 500 Manure in Cow Horn over Winter

[page 74] We take manure, such as we have available. We stuff it into the horn of a cow, and bury the horn a certain depth into the earth say about 18 in. to 2 ft. 6 in., provided the soil below is not too clayey or too sandy. (We can choose a good soil for the purpose. It should not be too sandy). You see, by burying the horn with its filling of manure, we preserve in the horn the forces it was accustomed to exert within the cow itself, namely the property of raying back whatever is life-giving and astral. Through the fact that it is outwardly surrounded by the earth, all the radiations that tend to etherealize and astralize are poured into the inner hollow of the horn. And the manure inside the horn is inwardly quickened with these forces, which thus gather up and attract from the surrounding earth all that is ethereal and life-giving.

And so, throughout the winter — in the season when the Earth is most alive — the entire content of the horn becomes inwardly alive. For the Earth is most inwardly alive in winter-time. All that is living is stored up in this manure. Thus in the content of the horn we get a highly concentrated, life-giving manuring force. Thereafter we can dig out the horn. We take out the manure it contains.

During our recent tests (in Dornach), as our friends discovered for themselves, when we took out the manure it no longer smelt at all. This was a very striking fact. It had no longer any smell, though naturally it began to smell a little when treated once more with water. This shows that all the odoriferous principles are concentrated and assimilated in it. Indeed it contains an immense ethereal and astral force; and of this you can now make use. When it has spent the winter in the earth, you take the stuff out of the horn and dilute it with ordinary water — only the water should perhaps be slightly warmed.

PREPARATION 501 Quartz in Cow Horn over Summer

[page 75] Once more you take the horns of cows. This time, however, you fill them not with manure but with quartz or silica or even orthorclase or felspar, ground to a fine mealy powder, of which you make a mush, say of the consistency of a very thin dough. With this you fill the horn. And now, instead of letting it "hibernate," you let the horn spend the summer in the earth and in the late autumn dig it out and keep its contents till the following spring.

So you dig out what has been exposed to the summery life within the earth, and now you treat it in a similar way. Only in this case you need far smaller quantities. You can take a fragment the size of a pea, or maybe only the size of a pin's head, and distribute it by stirring it up well in a bucket of water. Here again, you will have to stir it for an hour, and you can now use it to sprinkle the plants externally. It will prove most beneficial with vegetables and the like.

I do not mean that you should water them with it in a crude way; you should spray the plants with it, and you will presently see how well this supplements the influence which is coming from the other side, out of the earth itelf, by virtue of the cow-horn manure. And now, suppose you extend this treatment to the fields on a large scale. After all, there is no great difficulty in doing so. Why should it not be possible to make

> **machines, able to extend over whole fields the slight sprinkling that is required? If you do this, you will soon see how the dung from the cow-horn drives from below upward, while the other draws from above — neither too feebly, nor too intensely. It will have a wonderful effect, notably in the case of cereals.**

By this point in the agriculture course, you should be able to understand why the silicon in the quartz should benefit cereals: these are plants like wheat, oats, barley, rye, etc, which grow on long stalks which require silicious forces to grow in abundance.

In the 17th Century, a scientist, Giordano Bruno, invited a Church Father named Criminino to look through a telescope designed by Galileo so that he could see for himself the mountains on the Moon which the Church had proclaimed were impossible. Criminino refused to look through Galileo's telescope and rewarded Bruno with an invitation to an outdoor barbecue in Rome(14). Today materialist scientists are the modern Church Fathers and they refuse, for the most part, to look through Rudolf Steiner's *macroscope*, calling his works the scientific equivalent of Bruno's heresy, metaphysical fantasies. Like Criminino, they refuse to look beyond their self-imposed limits on sensory data and open their eyes and minds to the wider range of forces in the Universe, up until now.

> **[page 89] Spiritual Science always tries to look into the effects of living thing on a *large* scale. It does not pry into the minute and microscopic, that is not the most important. It does not primarily concern itself with the conclusions which are drawn from the minute — from microscopical investigations. To observe the *macrocosmic* — the wide circumference of Natures' workings — that is the task of Spiritual Science.**

It is the essence of homeopathy that substances which would be poisonous if ingested in any measurable quantity, are beneficial to us in microscopic quantities (minute dilutions). This is opposite to the view of materialistic science that if a substance is poisonous in large quantities, it maintains its poisonous effect at any dilution. So with this kind of thinking, science only ignores so-called poisonous materials when its instruments can not easily measure their presence. But it is precisely in these "non-measurable" quantities that the beneficial effects appear(15).

> **[page 90] Those that are commonly called the *stimulant* effects are indeed the most important of all. Precisely the substances people think inessential are present all around the Earth — actively working, though in the finest and most tenuous dilution. Moreover, the plants need them just as much as they need what comes to them from the Earth. They draw them in from the world-circumference — from the cosmic circle. Mercury, arsenic, silicic acid — these substances the plants suck upward from the soil of the Earth after they have been rayed into the soil from the Cosmos.**

Now we learn about yarrow, *Achillea millefolium*, which Steiner says contains that which "the Spirit always moistens its fingers herewith when it wants to carry the different constituents — as carbon, nitrogen, etc. — to their several organic places. Yarrow stands out in Nature as though some creator of the plant-world had had it before him as a model, to show him how to bring the *sulphur* into a right relation to the remaining substance of the plant."

> **[page 91] One would like to say, "In no other plant do the Nature-spirits attain such perfection in the use of sulphur as they do in yarrow." And if you also know of the working of yarrow in the animal or human organism — if you know how well it can make good all that is due to weaknesses of the astral body (provided it is rightly carried into the biological sphere) — then you will trace it still farther, in its yarrow-nature, throughout the entire process of plant growth. Yarrow is always the greatest boon, wherever it grows wild in the country — at the edges of the fields or roads, where cereals or potatoes. or any other crops are growing. It should on no account be weeded**

out. (Needless to say, we should prevent it from settling where it becomes a nuisance — it may become a nuisance, though it is never actually harmful).

In a word, like sympathetic people in human society, who have a favorable influence by their mere presence and not by anything they say, so yarrow, in a district where it is plentiful, works beneficially by its mere presence.

Yarrow is nice to have around like good friends who improve an area by their presence. I am not aware of any in this area, yarrow, that is, but will add it to a growing list of plants we wish to surround ourselves with in our new and expanded house and grounds.

PREPARATION 502 Yarrow in Stag Bladder over Summer

[page 92] Take the same part of the yarrow which is medicinally used, namely, the upper part — the umbrella-shaped inflorescence. If you have yarrow ready to hand, so much the better. Pick the fresh flowers and let them dry, only for a short time. Indeed, you need not let them dry so very much. If fresh yarrow is unobtainable — if you can only get the dried herb — you will do well before using it to press the juice out of the yarrow leaves. (Even from the dried leaves, you can get the required juice by decoction). Water the inflorescence a little with this juice.

Now you will see once more how we always remain within the living sphere. Take one or two hollow handfuls of this yarrow-stuff, pressed pretty strongly together, and sew it up in the bladder of a stag. Enclose the yarrow substance as best you can in the stag's bladder, and bind it up again. There, then, you have a fairly compact mass of yarrow in the stag's bladder. Now hang it up throughout the summer in a place exposed as far as possible to the sunshine. When autumn comes, take it down again and bury it not very deep in the Earth throughout the winter.

So you ,will have the yarrow flower (it matters not if it be tending already towards the fruit) enclosed in the bladder of the stag for a whole year, and exposed — partly above the earth, partly below — to those influences to which it is susceptible. You will find that it assumes a peculiar consistency during the winter.

In this form you can now keep it as long as you wish. Add the substance which you take out of the bladder to a pile of manure — it may even be as big as a house — and distribute it well. Nay, you need not even do much to distribute it: the radiation itself will do the work. The radiating power is so very strong that if you merely put it in — even if you do not distribute it much — it will influence the whole mass of manure or liquid manure or compost.

The next plant to be utilized in a preparation is camomile (Chamomilla officinalis) but one needs a bovine intestine to provide the container for the camomile flowers.

PREPARATION 503 Camomile in Cow Intestines (hank) over Winter

[page 94] This plant is camomile (Chamomilla officinalis). It is not enough to say that camomile is distinguished by its strong potash and calcium contents. The facts are these: Yarrow mainly develops its sulphur-force in the potash-formative process. Hence it has sulphur in the precise proportions which are necessary to assimilate the potash. Camomile, however, assimilates calcium in addition. Therewith, it assimilates that which can chiefly help to exclude from the plant those harmful effects of fructification, thus keeping the plant in a healthy condition. It is a wonderful thing to see. Camomile too has a certain amount of sulphur in it, but in a different quantity because it has calcium to assimilate as well.

Now once again you can look around you. The indications of Spiritual Science invariably consider the great and wide circles of life-the macrocosmic, not the microscopic conditions. Now you must trace, for example, the process which camomile

undergoes in the human and animal organism, when taken as food or medicine. The bladder is comparatively unimportant for what the camomile must undergo in the human or animal organism. In this case, the substance of the intestinal walls is far more important. Therefore, if you want to work with camomile — as is the other case with yarrow you must proceed as follows.

Pick the beautiful delicate little yellow-white heads of the flowers, and treat them as you treated the umbels of the yarrow. But now, instead of putting them in a bladder, stuff them into bovine intestines. You will not need very much. Here again, it is a charming operation. Instead of using these intestinal tubes as they are commonly used for making sausages, make them into another kind of sausage — fill them with the stuffing which you thus prepare from the camomile flower.

This preparation, once more, need only be rightly exposed to the influences of Nature. Observe how we constantly remain within the living realm. In this case, living vitality connected as nearly as possible with the earthy nature must be allowed to work upon the substance. Therefore you should take these precious little sausages — for they are truly precious — and expose them to the earth throughout the winter. Bury them not too deep, in soil as rich as possible in humus. If possible, choose a spot where the snow will remain for a long time and where the sun will shine upon the snow, for you will thus contrive to let the cosmic astral influences work down into the soil where your precious little sausages are buried.

Dig them out in the springtime and keep them in the same way as before. Add them to the manure just as you did the yarrow-preparation. You will thus get a manure with a more stable nitrogen-content, and with the added virtue of kindling the life in the earth, so that the earth itself will have a wonderfully stimulating effect on the plant-growth. Above all, you will create more healthy plants — really more healthy — if you manure in this way than if you do not.

The ingredient for the next preparation is the stinging nettle, which is a plant I am unfamiliar with by that name. Steiner calls it a "Jack-of-all-trades" because it can do so much for plant growth.

[page 95] It can do very, very much. It, too, carries within it the element which incorporates the Spiritual and assimilates it everywhere, namely, sulphur, the significance of which I have explained already. Moreover, the stinging nettle carries potassium and calcium in its currents and radiations, and in addition it has a kind of iron radiation. These iron radiations of the nettle are almost as beneficial to the whole course of Nature as our own iron radiations in our blood. Truly, the stinging nettle is such a good fellow and does not deserve the contempt with which we often look down on it where it grows wild in Nature. It should really grow around man's heart, for in the world outside — in its marvelous inner working and inner organization — it is wonderfully similar to what the heart is in the human organism. The stinging nettle is the greatest boon.

This often despised plant is the basis for this preparation.

PREPARATION 504 Stinging Nettle in the Ground for a Year

[page 95, 96] Now, to improve your manure still more, take any stinging nettles you can get, let them fade a little, press them together slightly, and bury the stuff in the earth. Add a slight layer of peat-moss or the like, so as to protect it from direct contact with the soil. Bury it straight in the earth, but take good note of the place, so that when you afterwards dig it out again you will not be digging out mere soil. There let it spend the winter and the following summer — it must be buried for a whole year.

This substantiality will now be extremely effective. Mix it with the manure, just as you did the other preparations. The general effect will be such that the manure becomes

inwardly sensitive — truly sensitive and sentient, we might almost say intelligent. It win not suffer any undue decompositions to take place in it — any improper loss of nitrogen or the like.

This" condiment" will make the manure intelligent, nay you will give it the faculty to make the earth itself intelligent — the earth into which the manure is worked. The soil will individualize itself in nice relationship to the particular plants which you are growing. It is like a permeation of the soil with reason and intelligence, which you can bring about by this addition of *Urtica dioica*.

There are no such thing as plant diseases, only plants growing in unhealthy soil. To have a disease, one must have an astral body and plants have only physical and etheric bodies and the only astral aspect of plants forms around the reproductive organs as a mist, if you will. But, still there are plants which seem sick and need some help; for them Steiner prescribes oak bark as a natural source of living calcium, that is, calcium located within a living substance, like that which oak bark has in abundance.

PREPARATION 505 Oak Bark in Animal Skull for Autumn & Winter

[page 97] Now there is a plant containing plenty of calcium — 77 per cent of the plant substance, albeit in a very fine state of combination. I refer to the *oak* — notably the rind of the oak, which represents an intermediate product between plant-nature and the living earthy nature, quite in the way I explained when I spoke of the kinship of the living earth with bark or rind. For calcium as it appears in this connection, the calcium-structure in the rind of the oak is absolutely ideal.

Now calcium, when it is still in the living state, not in the dead (though even in the dead it is effective) — calcium has the property which I explained once before. It restores order when the ether-body is working too strongly, that is, when the astral cannot gain access to the organic entity. It " kills" or damps down the ether-body, and thereby makes free the influences of the astral body. So it is with all limestone. But if we want a rampant ethereal development, of whatsoever kind, to withdraw in a regular manner — so that its shrinking is beautiful and regular and does not give rise to shocks in the organic life — then we must use the calcium in the very structure in which we find it in the bark of the oak.

We collect oak-bark, such as we can get. We do not need much — no more than can easily be obtained. We collect it and chop it up a little, till it has a crumb-like consistency. Then we take a *skull* — the skull of any of our domestic animals will do, it makes little or no difference. We put the chopped-up oak-bark in the skull, close it up again as well as possible with bony material, and lower it into the earth, but not too deep. We cover it over with peat-moss, and then introduce some kind of channel or water-pipe so as to let as much rain-water as possible flow into the place. (We might even do it as follows: take a barrel where rain-water is flowing constantly in and out. Put in it vegetable matter such as will bring bout the continued presence of some vegetable slime. Let the bony vessel which contains the crumbled oak-bark lie in the slime in the water). This, once again, must hibernate. Snow-water is just as good as rain-water. It must pass through autumn and winter in this way. What you add to your manuring matter from the resulting mass will lend it the forces, prophylactically to combat or to arrest any harmful plant diseases.

The next plant is the lowly dandelion, treated so often as a weed, but has many uses in salads and teas. Here it is used in a preparation for enlivening manures and mulch beds.

PREPARATION 506 Dandelion in Cow Artery over the Winter

[page 99] We must now look for a plant which by its own relationship between potassium and silicic acid can impart to the dung — once more, if added to it in a kind of

homoeopathic dose — the corresponding power. And we can find it. This, too, is a plant which if it only grows among our farms, has a most beneficial influence in this direction. It is none other than the common dandelion (*taraxacum officinale*).

The innocent yellow dandelion! In whatever district it grows, it is the greatest boon; for it mediates between the silicic acid finely, homoeopathically distributed in the Cosmos, and that which is needed as silicic acid throughout the given district of the Earth. Truly this dandelion is a kind of messenger of Heaven. But if we need it especially — if we want to make it effective in the manure — we must use it in the right way. To this end — it will almost go without saying at this stage — we must expose the dandelion to the influences of the Earth, and in the winter season.

Here, too, we must gain the surrounding forces by a similar treatment as in the other cases. Gather the little yellow heads of the dandelion and let them fade a little. Press them together, sew them up in a bovine mesentery, and lay them in the earth throughout the winter.

In springtime you take the balls out, and you can keep them now until you need them. They are now thoroughly saturated with cosmic influences. The substance you get out of them can once again be added to the dung, and in a similar way. It will give the soil the faculty to attract just as much silicic acid from the atmosphere and from the Cosmos as the plants need, to make them really sentient to all that is at work in their environment. For they of themselves will then attract what they need.

The next preparation is the easiest to make as you simply press the juice from valerian flowers. It is the final addition to the pantheon of manure and compost enliveners and is the only one in liquid form. No need for adding chemical fertilizers to your manure or mulch bed if you use this set of preparations: yarrow, camomile, stinging-nettle, oak-bark and dandelion, and finally add a dash of valerian extract to it.

PREPARATION 507 Valerian Flower Extract

[page 100] Before you make use of the manure thus prepared, press out the flowers of Valerian. (*Valeriana officinalis*) Dilute the extract very highly. (You can do it at any time and keep it, especially if you use want water in dilution). Add this diluted juice of the Valerian flower to the manure in very fine proportions. Then you will stimulate it to behave in the right way in relation to what we call the" phosphoric" substance.

With the help of these six ingredients you can produce an excellent manure — whether from liquid manure, or ordinary farmyard-manure, or compost.

These final two preparations are added for completeness. Steiner discusses the process for 508, but 509 Barrel Compost is a recent innovation to ease the application of 502 through 508. The separate application of 502 through 508 is best done on a mulch bed, but the barrel compost, 509, can be applied directly to all plants in addition to mulch beds.

PREPARATION 508 Horsetail Rush Decoction

Take horsetail rushes, boil them in water, and sprinkle the resulting decoction at the base of plants.

PREPARATION 509 Barrel Compost (502 to 508)

This is a Combination of Preparations 502 - 507. All these preparations are potentized for one hour in fresh cow manure, and cured in the ground till maturity.

How is it that gardeners and farmers today are able to ignore (for the most part) the cycles of the Moon when sowing, harvesting, and adding manure to fertilize their plants? The manure will simply wait in the soil until the next Full Moon. Thus, the unknowing can claim that the phase of the Moon has no effect on the manuring process and for all practical purposes, they may seem to be right because their error is

hidden by a forgiving Full Moon which comes once a month without failing. In fact, the Full Moon period of effects lasts about half a moon's cycle or about two weeks.

> **[page 110] However, Nature is not so cruel as to punish man forthwith for his slight inattention and discourtesy to the Moon in sowing and in reaping. We have the full Moon twelve times a year, and that is adequate for a sufficiency of the full-Moon influences, i.e. of the forces that quicken the fruiting process. If on any occasion we perform what tends to fertilization, not at the full Moon but at the new, it will simply wait in the Earth till the next full Moon. So it gets over our human errors and takes its cue from great Nature.**

Weeds are defined as living plants where we don't want them, regardless of whether the plants may be useful or not. One can see that stinging nettle and dandelions are often treated a weeds and attempts are made to extinguish them. A weed is a plant defined by humans who wish it gone, but exactly how do we get rid of these unwanted plants without damaging other plants in the neighborhood?(16)

We cannot stop the Moon's influence on either the plants or the weeds, but we can treat the soil in such a way that selectively the weeds will not receive Moon influences. The process is simple: we burn the seeds of the weeds, sprinkle the resulting "pepper" on the ground where we don't want that plant to grow, and after a couple of years, the weed will not grow there. The process is selective as the plant will not grow only where you sprinkled the pepper.

> **[page 111] You see the weeds growing rampant in a given year. You must accept the fact. Do not be alarmed; say to yourself: Something must now be done. So now you gather a number of seeds of the weed in question. For in the seed the force of which I have just spoken has reached its final culmination. Now light a flame — a simple wood-flame is best — and burn the seeds. Carefully gather all the resulting ash. You get comparatively little ash, but that does not matter. Quite literally, for the plants thus treated by letting their seeds pass through the fire and turn to ash, you will have concentrated in the ash the very opposite force to that which is developed in attracting the Moon-forces.**
>
> **Now use the tiny amount of substance you have thus prepared from a variety of weeds, and scatter it over your fields. You need not take especial care in doing so, for these things work in a wide circumference. Already in the second year you will see, there is far less of the kind of weed you have thus treated. It no longer grows as rampantly. Moreover, many things in Nature being subject to a cycle of four years, after the fourth year you will see, if you continue sprinkling the pepper year by year, the weed will have ceased to exist on the field in question. Here, in fact, you will make fruitful the "effects of smallest entities," which have now been scientifically proven in our Biological Institute.**

If you, dear Reader, are thinking that you would like to have proof before attempting this, I can understand, but why not provide the proof for yourself by doing it? Steiner says, "Set to work and try to verify them. If you do the experiments rightly, you will soon see them confirmed. If I had a farm, however, I should not wait to see them verified. I should apply the method at once, for I am sure that it will work. So it is for me. Spiritual-scientific truths are true in themselves, we do need to have them confirmed by other circumstances or by external methods."

As for eradicating animal pests, Steiner gives instructions for getting rid of field mice, after describing all the various scientific methods tried, most of which involve deadly bacteria or poisons. And he says the mice treated this way always come back. Animals conserve Moon forces, but not planetary forces and Steiner's method consists of burning the skin taken from a field mouse during the time when Venus is in Scorpio.

[page 113, 114] Thus you obtain your burned mouse-skin at the time when Venus is in Scorpio. And there remains, in what is thus destroyed by the fire, the corresponding negative force as against the reproductive power of the field-mouse. Take the pepper you get in this way, and sprinkle it over your fields. In some districts it may be difficult to carry out; then you can afford to do it even more homoeopathically; you do not need a whole plateful.

Provided it has been led through the fire at the high conjunction of Venus and Scorpio, you will find this is an excellent remedy. Henceforth, your mice will avoid the field No doubt they are cheeky little beasts; they will soon come out again if the pepper has been so sprinkled that a few areas remain unpeppered in the neighborhood. There they will settle down again. Undoubtedly the influence of it rays out far and wide; nevertheless, it may not have been done quite thoroughly. But the effect will certainly be radical if the same is done in the whole neighborhood.

In getting something done in the entire neighborhood or region, one today seems always to think of some ordinance enforced by the police. Steiner wisely points out that police are not needed when insight is a common human faculty.

[page 113] I venture to say that in the future we must look far more to intelligent insight than to police regulations. That will be progress in our social life(17).

What about insects pests? What can we do about them? You cannot skin an ant or a wasp. With insects, however, you can burn the entire insect and spread the results around in the area where you want that insect to stay away.

One problem we have locally is red ants (also called "fire ants" because their stings can burn like fire). After living twenty years in one place, I had eradicated the fire ants with fire. Didn't know about burning and scattered the resulting pepper back then, so what I did was merely pour a small amount of gasoline around and over the hill, set it afire and use a shovel to ensure that all the gasoline burnt and that the queen's chamber was reached by the fire. The ants never returned to that spot, but the fire left a small burnt spot in the grass for awhile, so I discovered a water solution: I spurt some dishwashing liquid over and around the edges of the anthill and pour a bucket or two of water, applying the shovel as before. Fire ants survive flooding rain, so why would cleaning them with detergent kill them? I suspect the reason is surface tension. The way detergents lift dirt from clothes is reducing the surface tension. The smaller an object is, the more it is affected by surface tension and dirt particles are tiny, as are the heads of ants. So when normal water engulfs an ant, a bubble of air forms around its head like a diver's helmet and keeps it alive while it carries the ant, as by a helium balloon, up to the surface of the water where the ant can survive. Add detergent to water, the bubble no longer forms and the ant drowns from lack of air, never reaching the surface. I call this the Royal Bath because if successful in eradicating the ant colony, the Queen ant has received her bath. If the colony survives a couple of Royal Baths, it's the fire next time. The Royal Bath is easy to administer and leaves no scorched patch in the grass. But notice that neither of my techniques discourages ants from settling in nearby areas on my lawn. Next time I apply the fire, I will spread the ashy material in around the edge of the lawn to discourage encroachment from adjacent properties. My most recent attack on the red ant hills (about three of them) took place coincidentally in May when the Sun is in Taurus, not because I had already read the next passage, but because it was the first time I mowed the lawn. As I spotted a small ant hill while mowing, I marked it with a small white flag and returned to the spot for my Royal Bath and fire followup. The flag remained until I had verified during subsequent mowing trips that the ants had not returned.

[page 115] In this case you do not take part of the insect as you do with the mouse. You must take the entire insect. An insect like this, which settles harmfully in the plant-root, is altogether an outcome of cosmic influences; it only needs the Earth as its underlying basis. Therefore you must burn the whole insect. It is best to burn it; that is the quickest way. You might also let it decay; possibly this would be even more thorough, only it is

> **difficult to collect the products of decay. But you will certainly attain what you need by burning the whole insect.**
>
> **Now it is necessary to perform this operation when the Sun is in the sign of Taurus. (If need be, you can keep the insect and burn it when the time comes). This, you see, is precisely the opposite of the constellation in which Venus must be when you prepare your mouse-skin pepper. In effect, the insect world is connected with the forces that evolve when the Sun is passing through Aquarius, Pisces, Aries and Gemini and on to Cancer. In Cancer it appears quite feebly, and it is feeble again when you come to Aquarius. It is while passing through these regions that the Sun rays out the forces which relate to the insect world.**

Astronomers, who owe their existence to the ancient astrologers, now ridicule the idea that the stars have any influence on animals or humans. Yet the Wisdom of the Stars was well-respected in ancient times when the average human could directly perceive the spiritual forces coming to Earth from the Stars.

> **[page 116] In a strange way we come again to what was formerly described as "Wisdom of the Stars." Modern astronomy serves as a mere mathematical orientation, nor can we put it to any other use. It was not so in former ages. Time was when they saw in the stars something from which they could take their direction for earthly life and work. Such science is utterly lost today.**

The science of the stars can be recovered today by anyone who will do the work of studying Rudolf Steiner's spiritual science. The whole field of bio-dynamic gardening provides us a practical way of adjusting our gardening practices to the phases of the Moon, the orientation of the other planets and the constellations of the zodiac. There are annual calendars available which recommend on a daily basis when to plant what kind of fruit or vegetables, when to till them, and when to harvest them for best effect.

The next subject is one that horticulturists place great importance on: *plant diseases*. Yet, Steiner illustrates that there are no plant diseases — that plants, rightly understood, can *not* have a disease. Disease is something that only something with an astral body can have, and plants have no astral body, only a physical and etheric (ethereal) body.

> **[page 116, 117] It only remains for us to consider so-called *plant diseases*. Properly speaking, we cannot really say "plant diseases." The rather abnormal processes which occur as plant-diseases are not diseases in the same sense as in animal diseases. (We shall understand the difference more exactly when we come to the animal kingdom.) Notably, they are not at all the same kind of process as in human diseases.**
>
> **Properly speaking, disease is not possible without the presence of an astral body. In an animal or human being, the astral body is connected with the physical through the ethereal. There is a certain normal condition. The astral body may be connected *more* intensely with the physical (or with any one of its organs) than it should normally be. In such a case, the ether-body fails to provide a sufficient cushioning or "padding," and the astral body drives into the physical too strongly. It is under these conditions that most of our illnesses arise.**

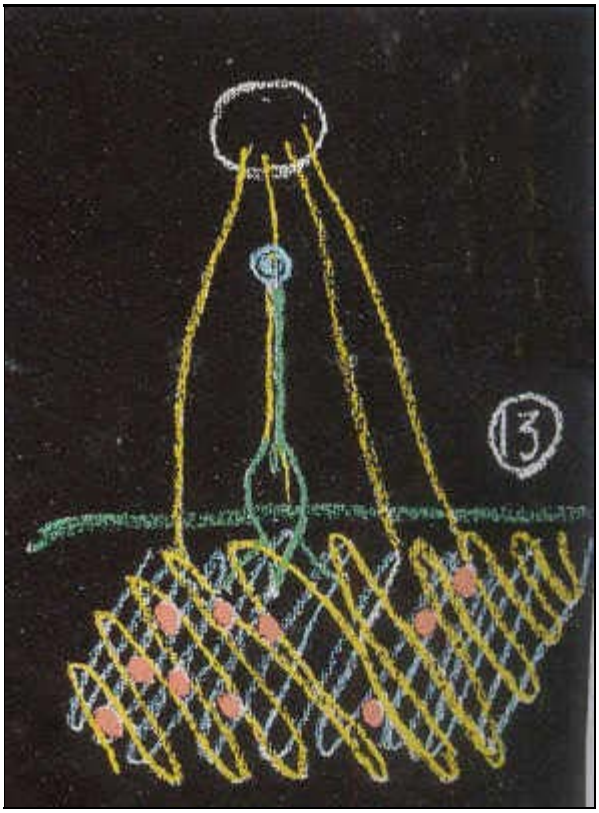
Clearly materialistic scientists, who disdain the presence of the etheric and astral bodies, blur the distinction between how animals get disease and plants seem to be diseased. "What's the big deal?" you ask, "I have some sick plants in my own garden. I know they have some kind of fungus growing on them." Yes, that is true, but look to the soil for the source and the solution of your problem, the plant is simply illuminating for you some defect in the soil which needs correction.

> **[page 117] Now the plant has in it no real astral body. Hence the specific way of being ill, which can occur in the animal and in the human being, does not occur in the plant. We must be well aware of this fact. Thus we must first gain an insight into the question,**

what is it that can bring about illness of plants?

You will have seen, from my descriptions, how the whole earth in the plant's environment has an inherent life of its own. With all this life in the Earth — albeit not so intensely as to bring forth plant-forms, yet nevertheless with some intensity — manifold forces of growth and faint suggestions of reproductive forces are present all around the plant. Moreover, there is all that which is working in the Earth under the influence of the full-Moon forces, mediated by the water. Here is a wealth of significant relationships.

In our previous home of twenty years, every year our crepe myrtles, otherwise very healthy, would in the summer during its blooming season, would develop a fungoid growth which would shrivel the tips of their leaves. Each year the new growth of leaves would look perfect until the time of blooming and then white mildew-looking growth would shrivel the leaves on the tip of every branch again. I never once considered the fungus as due to a Moon influence, up until now. But as I read the next passage, I realized that we have a lot of rain every year at the time the crepe myrtle is going into its blooming and seed-production stage and thus the Moon-forces could enter the ground too strongly and cause the apparent disease on the stem-tips where the seeds are produced.



[page 117, 118] Now the Moon-influences in the soil can also become too strong. This can happen in a very simple way. You need only call to mind a thoroughly wet winter, followed by a thoroughly wet spring. Then the Moon-forces will enter the earth too strongly. The earth will become too much alive. Once more, you will have an over-intense vitalization of the earth. I will indicate it by making little red dots (Diagram 13) where the earth is too strongly vitalized by the Moon. If the little red dots were not there — if the earth were not over-vitalized by the Moon — plant-life would grow upon it, developing normally up to the seed: corn, for instance, growing upward to the seed.

If the Moon imparts precisely the right vitality to the earth, this vitality will work on and upward till the seed develops. Assume now that the Moon-influence is too strong; the earth is too much vitalized. Then it will work too strongly from below upward. That which should only occur in the seed-formation will occur at an earlier stage. Precisely when it is too strong, it will be insufficient to reach to the top. Through its very intensity, it will work itself out more in the lower regions. As a result of the strong Moon-influence, the seed-formation proper will have insufficient power.

The seed receives something of dying life into itself and through this dying life there arises, as it were, above the soil — above the primary level of the earth — a secondary level. Although it is not earth, the same effects are there — and, as a consequence, the seed (the upper part of the plant) becomes a kind of soil for other organisms. Parasites and fungoid growths arise — all manner of fungoid growths.

Thus we see the forming of mildew, blight, rust, and similar diseases. The over-intense Moon-influence prevents what should work upward from the earth from reaching the necessary level. The true force of fertility depends upon the Moon's influence being normal. It must not be too intense. It may seem strange, but it is so: this

result is brought about, not by a weakening but by an over-intensity of the Moon-forces. If we merely theorized about it instead of looking at the process, we might reach the opposite conclusion, but we should be wrong. Perception shows it as I have now described it. What, then, should we do?

Here is the solution I mentioned earlier in this review: a decoction of horse-tail rushes added to the base of the crepe myrtles will reduce the excessive Moon-influences and allow the plant tips to develop their normal reproductive healthiness. If this is a "plant disease" how could adding something to the soil remove the disease? The idea is so hard to conceive that its very difficulty should indicate the folly of the idea of a "plant disease."

[page 118] We must somehow relieve the earth of the excessive Moon-force that is in it. And we can do so. We need only perceive what works in the earth so as to deprive the water of its mediating power; so as to lend the earth more "earthiness" and prevent it from absorbing the excessive Moon-influences through the water it contains. We can achieve this result. Outwardly, it all remains just as it is. But we now prepare a kind of tea or decoction — a pretty concentrated decoction of *equisetum arvense*.(18) This we dilute, and sprinkle it as liquid manure over the fields, wherever we need it — wherever we want to combat rust or similar plant-diseases. Here again, very small quantities are sufficient — a homoeopathic dose is quite enough.

Once more you see how the several fields of life work into one another. Understand the strange influence which equisetum arvense has upon the human organism through the function of the kidneys, and you will have your guiding line. Needless to say, you cannot merely speculate. Nevertheless, you have a guiding line, and you will now investigate how equisetum works when you transform it as described, into a kind of liquid manure, and sprinkle it over the fields. You need no special apparatus. It will work far and wide, even if you only sprinkle a very little, and you will find it an excellent remedy. Strictly speaking, it is not a medicament, for in the true sense of the word a plant cannot be diseased. It is not a healing process in the proper sense; it is simply the opposite process to the one I described.

The next passage contains Steiner's call for scientists to lift their eyes from their microscopes and look out once again into the macrocosm. To move from looking at the microscopic world to macrocosmic world, in effect, looking through a macroscope at the world to understand Nature to its fullest. Microscopes will always have their place in the scientist's laboratory, but the scientist's macroscope is ever at hand in the outside world of Nature.

[page 119] What does science do nowadays? It takes a little plate and lays a preparation on it, carefully separates it off and peers into it, shutting off on every side whatever might be working into it. We call it a "microscope." It is the very opposite of what we should do to gain a relationship to the wide spaces. No longer content to shut ourselves off in a room, we shut ourselves off in this microscope-tube from all the glory of the world. Nothing must now remain but what we focus in our field of vision.

By and by it has come to this: scientists always have recourse, more or less, to their microscope. We, however, must find our way out again into the macrocosm. Then we shall once more begin to understand Nature — and other things too.

We have already seen the theoretical background of bio-dynamical gardening and some of the practical applications it can have. In the remainder of this review, I would like share a medley of aspects which appear in the Discussions and last two lectures.

[page 124, Discussion] *Question*: What if one uses inorganic manures?

***Answer*: Mineral manuring is a thing that must cease altogether in time, for the effect**

> **of every kind of mineral manure, after a time, is that the products grown on the fields thus treated lose their nutritive value. It is an absolutely general law.**

Rudolf Steiner predicted almost a century ago the present predicament that bee-keepers find themselves in: a dearth of honey-bees in many areas. The solution to their problems lie in a careful study and implementation of Steiner's recommendations of things to do and things to avoid. Especially detrimental is the buying Queen bees instead of breeding them in one's own hives.

> **[page 124, Discussion]** ***Answer cont.:*** **In a recent discussion on bee-keeping, a modern bee-keeper was especially keen on the commercial breeding of queens. Queens are sold in all directions nowadays, instead of merely being bred within the single hives. I had to reply: No doubt you are right: but you will see with painful certainty — if not in thirty or forty, then certainly in forty to fifty years' time — that bee-keeping will thereby have been ruined.**

When you, as a child, dug for earthworms, did you naturally go the base of a tree to find them? I think not, we usually went to some place away from a tree that was dark and humid and full of humus. Earthworms love areas of intense ethereal vitality and as Steiner says in this next passage, the nature of tree roots deprive the soil of its ethereal activity, thus earthworms will not be found in close proximity to the base of large trees.

> **[page 128] Within the tree arises poverty of ether as compared to the plant. Once more, here within, it will be somewhat poorer in ether. And as, through the cambium, a relative *poverty of ether* is engendered in the tree, the root in its turn will be influenced. The roots of the tree become mineral — far more so than the roots of herbaceous plants. And the root, being more mineral, deprives the earthly soil — observe, we still remain within the realms of life — of some of its ethericity. This makes the earthly *soil* rather *more dead* in the environment of the tree than it would be in the environment of a herbaceous plant.**

Everyone knows how wonderful the soil is when earthworms are found within it. Biologists talk merely about how the earthworm breaks up the soil by its movement and adds nutrients in its defecation, i.e., only about how the earthworm's physical body impacts on the soil. What Steiner focuses upon is how the earthworm acts as a marvelous regulator of the etheric forces of the soil.

> **[page 129] If the soil is tending to become too strongly living — if ever its livingness grows rampant — these subterranean animals see to it that the over-intense vitality is released. Thus they become wonderful *regulators*, safety-valves for the vitality inside the Earth. These golden creatures — for they are of the greatest value to the earth — are none other than the *earth-worms.***

But there are more primitive insects that in the larval stage attach themselves to the root-area of trees, so much so that Steiner says, "if the earth had no trees, there would be no insects on the earth." But the same trees have an astral richness above ground in the area of its leaves and an etheric poverty in their root area. The insect larva, which mature underground in the ether-poor region of the tree's roots, flourish as flying insects in the tree's upper leaf-structure. (Page 129)

Let's add the birds to mixture and talk about the "Birds and the Bees" or rather the birds and the butterflies. Have you ever notice how butterflies do not fly up into trees? Instead they seem to prefer the lower reaches of the trees and shrubs and bushes much closer to the ground. What is going on here? Must be something to do the intense astrality which surrounds the tree where its leaves are located. Why is this astrality important? Without it, you would soon detect "a kind of stunting of the vegetation."

> **[page 130] Now there is again a distant similarity between certain animals and the fully evolved, *i.e.* the winged, insect-world. These animals are the *birds*. In course of evolution**

> **a wonderful thing has taken place as between the insects and the birds. I will describe it in a picture. The insects said, one day: We do not feel quite strong enough to work the astrality which sparkles and sprays around the trees. We therefore, for our part, will use the treeing tendency of other plants; there we will flutter about, and to you birds we will leave the astrality that surrounds the trees. So there came about a regular division of labor between the *bird-world* and the *butterfly-world*, and now the two together work most wonderfully.**

We do best, as gardeners if we do not interfere with the birds and insects which visit our plants and trees. Mocking birds here love to gnosh on figs in my fig trees, but instead of scaring them away with various techniques, I decided a long time ago to make a deal with them, "You can have the figs at the top of the tree which are difficult for me to reach, and I for my part will leave you eat in peace." I lose only a few figs this way from the lower branches and enjoy feeding the birds this natural way instead of filling some bird feeder with seed from other parts of the world which I have to pay for. The same applies to insects: I do not spray chemical pesticides, and the few insects which visit our garden enjoy the visit and benefit our plants with the astrality they bring to them. (Page 130)

Birds like the upper reaches of trees and butterflies the bushes, but what about bacteria and parasites which might harm plants, what kind of vegetation attracts them? The common toadstool and mushrooms. Steiner recommends that every farm have a forest and a meadow, for in the meadow the mushrooms can thrive and help keep harmful microscopic creatures away from the farm. (Page 132) I often see fairy-rings of mushrooms growing on our front lawn and other neighbors lawns and now I understand the importance they play in the health and growth of our gardens.

So-called modern scientists make fun of the alchemists and their four basic elements of earth, water, air, and fire (warmth). But look at the simple diagram I drew which shows how plants and animals operate in a perfectly symbiotic dance with these four elements.

> **[page 134] Organically speaking, the plant is in all respects an inverse of the animal — a true inverse. The excretion of air and warmth has for the plant the same importance as the consumption of food for the animal. In the same sense in which the animal lives by absorption of food, the plant lives by excretion of air and warmth. This, I would say, is the virginal quality of the plant. By nature, it does not want to consume things greedily for itself, but, on the contrary, it gives away what the animal takes from the world, and lives thereby. Thus the plant gives, and lives by giving.**

Have you ever heard anyone say, perhaps less delicately, "What you're saying is pure manure"? Remarkably, Steiner reveals that our brain has thoughts flow through it very much like manure flowing through our lower intestines.

> **[page 140] Here you encounter a relationship which you will think most paradoxical, even absurd at first sight, and yet you cannot overlook it if you wish to understand the animal organization — and the human too, for that matter. What is this brainy mass? It is simply an intestinal mass, carried to the very end. The premature brain-deposit passes out through the intestines. As to its processes, the content of the intestines is decidedly**

> **akin to the brain-content. To speak grotesquely, I would say: That which spreads out through the brain is a highly advanced heap of manure! Grotesque as it may be, objectively speaking this is the truth. It is none other than dung, which transmuted — through its peculiar organic process — into the noble matter of the brains, there to become the basis for Ego-development.**

What happens if we eat animals as food? There are forces in our body which are called into play when we eat plants that are not utilized if we eat animals. These forces, if left unused, will operate upon themselves and cause various diseases such as gout, diabetes, etc. I met a bartender friend of mine who was on crutches due to gout. He knew his diet of meat was causing his problem, but he insisted on taking medications which would allow him to maintain his same diet and without having gout. This is the kind of experimentation fostered by our "there-is-a-drug-for-everything" medical practices: not true health, but the temporary semblance of health. Fighting an unhealthy diet with unhealthy drugs is a losing fight.

> **[page 147] If we only eat plant food, these forces are called into activity to lift the plant up to human nature. If, on the other hand, we eat animal food from the outset, these forces are left latent in the organism. They remain unused and as a result they will begin to use themselves, depositing metabolic products in various parts of the organism, or driving out of the organs and claiming for themselves things that the human being himself should possess, as in the case of diabetes, etc. We only understand these matters when we look more deeply.**

A friend of mine has a daughter who was diagnosed with stage 4 liver disease, the next stage being a liver transplant. In discussions recently this friend revealed that her daughter never ate tomatoes. Normally that would not be a notable food dislike, but I had just read this passage written by Steiner in 1924:

> **[page 148] You know that in modern time the *tomato* has been introduced as a kind of staple food. Many people are fond of it. Now the tomato is one of the most interesting subjects of study. Much can be learned from the production and consumption of tomatoes. Those who concern themselves a little with these things rightly consider that the consumption of the tomato by man is of great significance. . . . a diet of tomatoes will, under given conditions, have a most beneficial effect on a morbid inclination of the liver. In effect, the liver of all organs works with the greatest relative independence in the human body. Therefore, quite generally speaking, liver diseases — those that are rather diseases of the animal — can be combated by means of the tomato.**

To my knowledge, the various recommendations made to the daughter included changes to diet, but never mentioned that she should begin eating tomatoes to benefit her kidneys. Somehow and somewhere this advice of Rudolf Steiner was lost in time and never made it into the annals of medical knowledge and practice, up until now.

So it is with much of the beneficial advice of Rudolf Steiner: it remains in its original German form, readable by only a small portion of humanity, but with the advent of the Internet and the publication of more translations in English, there is a growing portion of humanity becoming familiar with Steiner's works. The Steiner Schools and Waldorf Schools are growing in popularity around the world in recent decades and offer a constructive alternative to the standard method of teaching in state and parochial school systems. With the increasing popularity of organic farming and its products, people are becoming less sure whether the grocery produce marked as "organic" is really more nutritious as the protocols for organic farming are not well-defined and the lines can be easily blurred as to what is designated and labeled as *organic*.

For bio-dynamic gardening there is no blurred line: *no* chemical fertilizers and *no* chemical pesticides. If you want the most healthy and nutritious fruits and vegetables, start a small bio-dynamic garden in your own yard, and the only outside chemicals will be the sweat from your own body. The chemicals in your

perspiration will stimulate the plant to transpose their genetic structure, thereby creating proteins especially designed for your best health. As a result, the food you grow will be delicious and better for you. You will be amazed to find that the vegetables you grow with your own hands will taste better than those you can get anywhere else.

ADDENDUM

Summary of Bio-Dynamic Preparations

500 Horn Manure. Prepared in a cow horn — during the winter months. A small quantity stirred in water for one hour and sprayed in the evening (in large droplets) will stimulate root growth in plants.

501 Horn Silica (Crystal). Prepared in a cow horn during the summer months. A minute quantity stirred in water for one hour and sprayed in the morning (in very fine mist) will stimulate photosynthesis and structural strength of plants.

502 Yarrow Preparation. Prepared in a Stag Bladder, cured in humus for six months and inoculated into the compost, will enhance the plant's ability to absorb Potassium from the surrounding soil, i.e., it will produce soil bacteria that helps the plant in its quest to keep a proper K (Potassium) balance. I

503 Chamomile Preparation. Prepared in a cow's long intestine, cured in humus for six months and inoculated into the compost, will enhance the plant's ability to absorb Calcium, Sulfur & Potassium from the surrounding soil (see 502)

504 Stinging Nettle Preparation. Prepared directly in the soil (for 12 months) and thereafter inoculated into the compost, will enhance the plant's ability to absorb Iron from the surrounding soil (see 502)

505 Oak Bark Preparation. Prepared in the calcified skull of a domesticated animal (cow, pig, horse etc.) and cured in flowing well water for six months, will enhance the plant's ability to absorb Potassium and Calcium from the surrounding soil (see 502)

506 Dandelion Preparation. Prepared in a cow's mesentery and ripened for six months in humus soil, will enhance the plant's ability to absorb Silica & Calcium from the surrounding soil (see 502)

507 Valerian Preparation. Prepared directly from Valerian flowers (when in bloom), will enhance the plant's ability to absorb Phosphorus from the surrounding soil (see 502) and providing the compost and soil a protective skin.

508 Horsetail Preparation. Prepared directly from Equisetum Arvense (in full growth) will enhance the plant's ability to deal with Silica and new mutational possibilities.

509 Barrel Compost: This is a Combination of Preparations 502 - 507. All preparations mentioned are potentized for one hour in fresh cow manure, and cured in the ground till maturity.

Tree Paste: This Preparation is a scientific mix of Casein, Silica (water glass), Clay and cow manure; produced according to Dr. R. Steiner's indications. This will help to rejuvenate a tree's cambium and resistance to the attack of fungi, insect and beetles.

---------- ***Footnotes*** ----------

Footnote 1. Think of the possibilities for a chemical company who makes fertilizer: their product fosters insect pests which action generates the need for another chemical product to kill the very pests the first product made possible. The insecticide kills other organisms which naturally nourish the plants, so more fertilizer is required, in an increasing cycle of weed-and-feed profit for the chemical company.

Return to text directly before Footnote 1.

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Footnote 2. This promise is not made lightly. It is backed up by the personal experience of Anastasia in the Siberian taiga whose incredible claims were substantiated by Nobelist Barbara McClintock who proved that genes in a plant transpose readily in every generation of the plant.

Return to text directly before Footnote 2.

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Footnote 3. See From Mammoths To Mediums at http://www.doyletics.com/arj/mammoths.htm for details about beets containing "thinking vitamins". For beets as an aid for getting rid of intestinal worms, see From Beetroot to Buddhism at http://www.doyletics.com/arj/fbtbrvw.htm.

Return to text directly before Footnote 3.

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Footnote 4. This is my re-phrase of the translation in book. It obscured the meaning by striving to maintain the rhyme scheme. Here is the original: "If the cock crows on the dunghills/It'll rain — or it'll stay still."

Return to text directly before Footnote 4.

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Footnote 5. These heavenly spheres surrounding Earth can be seen in the diagram in this review, Life Between Death and Rebirth. Note the positions of Mercury and Venus have been switched by recent astronomers.

Return to text directly before Footnote 5.

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Footnote 6. These amazing plants seemed much more common during my childhood, growing along most highways and roads along the wet edges of shallow ditches in south Louisiana. See Photo here: http://www.doyletics.com/images/108equisetum.jpg

Return to text directly before Footnote 6.

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Footnote 7. Note that the phrase "beyond the Sun" refers to the geocentric system and means exactly the same thing as saying "beyond the Earth's orbit" in the heliocentric system astronomers use today.

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Footnote 8. Perhaps you could pay a visit to your local horticulturist and she will help reinforce your beliefs and explain how airy-fairy Steiner's works are.

Return to text directly before Footnote 8.

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Footnote 9. See Diagram 2. Note from page 37, "The Sun-quality is really that which is related, as a 'diaphragm' (for so we called it in this picture) with the surface of the earth." That explains why the Sun appears above and below the diaphragm — its nature is present in the diaphragm.

Return to text directly before Footnote 9.

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Footnote 10. Futhermore:

[page 39] If mankind with their present state of knowledge were suddenly obliged to create, from the comparatively few plants of the primeval epoch of the Earth, the manifold variety of our present fruits and fruit-trees, they would not get very far. We should not get far if it were not for the fact that the forms of our different fruits are inherited. They were produced at a time when humanity had knowledge, out of primeval and instinctive wisdom, how to create the different kinds of fruits from the primitive varieties that then existed. If we did not already possess the different kinds of fruit, handing them down by heredity — if we had to do it all over again with our present cleverness — we should not be very successful in creating the different kinds of fruit. Nowadays it is all done by blind experiment, there is no rational penetration into the process.

Return to text directly before Footnote 10.

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Footnote 11. One needs to read two books to encounter the concept of the plant as doctor. 1) The personal experience of Anastasia in the Siberian taiga and how she created a huge portion of the Russian population who now grow and eat their own food on their dachas. 2) For substantiation of Anastasia's incredible claims read A Feeling for the Organism by Nobelist Barbara McClintock.

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Footnote 12. In my review of Self-Consciousness, I wrote about pollination: (http://www.doyletics.com/arj/scrvw.htm)

The seed of a plant cannot create a new plant unless it is infused by the astral energy of a higher kingdom than itself. All the plant can do is manufacture plant material and store it in itself in its seeds. What the plant cannot do is to see itself at the height of its maturation, when it is in its fruit and seed forming stage. The plant absolutely requires a being from the animal kingdom, human kingdom or higher to view itself in its fruiting stage and to attach that image of the plant as holographic design for a future plant to the seed. The external, sensory data portion of this process biologists call "pollination", which, while it is a crucial part of preparing the seed, it is a part that is useless without the storage of the mature plant design, which only beings from realms higher than the plant can do. The wind can pollinate the plant, but the wind cannot see the plant at maturation.

Return to text directly before Footnote 12.

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Footnote 13. My father worked making ammonium nitrate fertilizer for many years and he always used it and swore by it, but he also carefully composted his garden using all the foliage of his plants and applied more compost than artificial fertilizer.

Return to text directly before Footnote 13.

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Footnote 14. Giordano Bruno was burnt at the stake in a piazza in Rome in 1600 A. D. for his heresy, a heresy we now know to be the truth.

Return to text directly before Footnote 14.

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Footnote 15. In my review of Nutrition and Stimulants quoted this passage where Steiner wrote about one of the benefits of arsenic, normally considered a poison: (http://www.doyletics.com/arj/nutritio.htm)

[page 78] Arsenic [homoeopathically] combats the accumulation of fat, it strengthens the astral body.

Return to text directly before Footnote 15.

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Footnote 16. One man sprayed the plant-killer (Round-Up) on some weeds on the edge of his property and the wind carried the chemical to a farm next door and wiped out a large portion of his neighbor's crop.
Return to text directly before Footnote 16.

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Footnote 17. The idea of non-coercive cooperation between people is at the root of the innovative work of Dr. Andrew Joseph Galambos. One need only consider the amount of productive work that could be done by the elimination of all coercive agencies in the world today to understand how important non-coercive cooperation can become once the basic ideas for its implementation are known and understood.

Return to text directly before Footnote 17.

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Footnote 18. Mare's-tail, horse-tail rushes, shave-grass, dinosaur grass. Return to text directly before Footnote 18.

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