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The Agriculture Course

Agriculture Course: Lecture 3

GA 327

Lecture Three

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MY DEAR FRIENDS,

The earthly and cosmic forces, of which I have spoken, work in the farm through the substances of the Earth, needless to say. In the next lectures we shall pass on to various practical aspects, but before we can do so we must enter a little more precisely into the question: How do these forces work through the substances of the Earth? In the present lecture we shall consider Nature's activity quite generally speaking.

One of the most important questions in agriculture is that of the significance of *nitrogen* — its influence in all farm-production. This is generally recognised; nevertheless the question, what is the essence of nitrogen's activity, has fallen into great confusion nowadays. Wherever nitrogen is active, men only recognise, as it were, the last excrement of its activities — the most superficial aspects in which it finds expression. They do not penetrate to the relationships of Nature wherein nitrogen is working, nor can they do so, so long as they remain within restricted spheres. We must look out into the wide spaces, into the wider aspects of Nature, and study the activities of nitrogen in the Universe as a whole. We might even say — and this indeed will presently emerge — that nitrogen as such does not play the first and foremost part in the life of plants. Nevertheless, to understand plant-life it is of the first importance for us to learn to know the part which nitrogen does play.

Nitrogen, as she works in the life of Nature, has so to speak four sisters, whose working we must learn to know at the same time if we would understand the functions and significance of nitrogen herself in Nature's so-called household. The four sisters of nitrogen are those that are united with her in plant and animal protein, in a way that is not yet clear to the outer science of

to-day. I mean the four sisters, carbon, oxygen, hydrogen and sulphur.

To know the full significance of protein it will not suffice us to enumerate as its main ingredients hydrogen, oxygen, nitrogen and carbon. We must include another substance, of the profoundest importance for protein, and that is sulphur. Sulphur in protein is the very element which acts as mediator between the Spiritual that is spread throughout the Universe — the formative power of the Spiritual — and the physical.

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 recognised 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.

Seeing that sulphur's activity in the economy of Nature is so very fine and delicate, we shall, however, best approach it by first considering the four other sisters: carbon, hydrogen, nitrogen and oxygen. These we must first learn to understand; we shall see what they signify in the whole being of the Universe. The chemist of to-day knows little of these substances. He knows what they look like when he has them in his laboratory, but he knows practically nothing of their inner significance in the working of the Cosmos as a whole. The knowledge of modern chemistry about them is scarcely more than our knowledge of a man of whose outer form we caught a glimpse as we passed by him in the street — or maybe we took a snapshot of him, and with the help of the photograph we can now call him to mind. We must learn to know the deeper essence of these substances. What science does is scarcely more than to take snapshots of them with a camera. All that is said of them in scientific books and lectures is scarcely more than that.

Let us begin with *carbon*. (The application of these matters to plant-life will presently emerge). Carbon indeed has fallen in our time from a highly aristocratic status to a very plebeian one. Alas, how many other beings of the Universe have followed it along the same sad way! What do we see in carbon nowadays? That which we use, as coal, to heat our ovens! That which we use, as graphite, for our writing. True, we still assign an aristocratic value to one modification of carbon, namely diamond, but we have little opportunity to value even that, for we can no longer afford to buy it!

What is known about carbon nowadays is very little when you consider its infinite significance in the Universe. The time is not so very long ago — only a few centuries — when this black fellow, carbon, was so highly esteemed as to be called by a very noble name. They called it the Stone of the Wise — the *Philosopher's Stone*. There has been much chatter as to what the "Stone of the Wise" may be. Very little has emerged from it. When the old alchemists and such people spoke of the Stone of the Wise, they meant carbon — in the various modifications in which it occurs. They held the name so secret and occult, only because if they had not done so, anyone and everyone would have possessed it — for it was only carbon. Why then was carbon the "Stone of the Wise?"

Here we can answer, with an idea from olden time, a point we need to understand again in our time when speaking about carbon. It is quite true, carbon occurs to-day in Nature in a broken, crumbled form, as coal or even graphite — broken and crumbled, owing to certain processes which it has undergone. How different it appears, however, when we perceive it in its living activity, passing through the human or animal body, or building up the plant-body out of its peculiar conditions. Then the amorphous, formless substance which we see as coal or carbon proves to be only the last excrement — the corpse of that which coal or carbon truly is in Nature's household.

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.

There is a hidden plastic artist in carbon, and this plastician building the manifold forms that are built up in Nature — makes use of sulphur in the process. Truly to see the carbon as it works in Nature, we must behold the Spirit-activity of the great Universe, moistening itself so-to-speak with sulphur, and working as a plastic artist — building with the help of carbon the more firm and well-defined form of the plant, or again, building the form in man, which passes away again the very moment it comes into being.

For it is thus that man is not plant, but man. He has the faculty, time and again to destroy the form as soon as it arises; for he excretes the carbon, bound to the oxygen, as *carbonic acid*. Carbon in the human body would form us too stiffly and firmly — it would stiffen our form like a palm. Carbon is constantly about to make us still and firm in this way, and for this very reason our breathing must constantly dismantle what the carbon builds. Our breathing tears the carbon out of its rigidity, unites it with the oxygen and carries it outward. So we are formed in the mobility which we as human beings need. In plants, the carbon is present in a very different way. To a certain degree it is fastened — even in annual plants — in firm configuration.

There is an old saying in respect of man: “Blood is a very special fluid” — and we can truly say: the human Ego, pulsating in the blood, finds there its physical expression. More accurately speaking, however, it is in the carbon — weaving and wielding, forming itself, dissolving the form again. It is on the paths of this carbon — moistened with sulphur — that that spiritual Being which we call the Ego of man moves through the blood. And as the human Ego — the essential Spirit of man — lives in the carbon, so in a manner of speaking the Ego of the Universe lives as the Spirit of the Universe — lives via the sulphur in the carbon as it forms itself and ever again dissolves the form.

In bygone epochs of Earth-evolution carbon alone was deposited or precipitated. Only at a later stage was there added to it, for example, the limestone nature which man makes use of to create something more solid as a basis and support — a solid scaffolding for his existence. Precisely in order to enable what is living in the carbon to remain in perpetual movement, man creates an underlying framework in his limestone-bony skeleton. So does the animal, at any rate the higher animal. Thus, in his ever-mobile carbon-formative process, man lifts himself out of the merely mineral and rigid limestone-formation which the Earth possesses and which he too incorporates in order to have some solid Earth within him. For in the limestone form of the skeleton he has the solid Earth within him.

So you can have the following idea. Underlying all living things is a carbon-like scaffolding or framework — more or less rigid or fluctuating as the case may be — and along the paths of this framework the Spiritual moves through the World. Let me now make a drawing (purely diagrammatic) so that we have it before us visibly and graphically. **(Diagram 6)**. I will here draw a scaffolding or framework such as the Spirit builds, working always with the help of sulphur. This, therefore, is either the ever-changing carbon constantly moving in the sulphur, in its very fine dilution — or, as in plants, it is a carbon-frame-work more or less hard and fast, having become solidified, mingled with other ingredients.

Now whether it be man or any other living being, the living being must always be permeated by an *ethereal* — for the ethereal is the true bearer of life, as we have often emphasised. This, therefore, which represents the carbonaceous framework of a living entity, must in its turn be permeated by an ethereal. The latter will either stay still — holding fast to the beams of the framework — or it will also be involved in more or less fluctuating movement. In either case, the ethereal must be spread out, wherever the framework is. Once more, there must be something ethereal wherever the framework is. Now this ethereal, if it remained alone, could certainly not exist as such within our physical and earthly world. It would, so to speak, always slide through into the empty void. It could not hold what it must take hold of in the physical, earthly world, if it

had not a physical carrier.

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.

What then is the physical carrier of that Spiritual which works in the ethereal? (For we may say, the ethereal represents the lowest kind of spiritual working). What is the physical carrier which is so permeated by the ethereal that the ethereal, moistened once more with sulphur, brings into it what it has to carry — not in Formation this time, not in the building of the framework — but in eternal quickness and mobility into the midst of the framework? 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*. I have sketched it here in green. if you regard it physically, it represents the oxygen. It is the weaving, vibrant and pulsating essence that moves along the paths of the oxygen. For the ethereal moves with the help of sulphur along the paths of oxygen.

Only now does the *breathing* process reveal its meaning. In breathing we absorb the oxygen. A modern materialist will only speak of oxygen such as he has in his retort when he accomplishes, say, an electrolysis of water. But in this oxygen the lowest of the supersensible, that is the ethereal, is living — unless indeed it has been killed or driven out, as it must be in the air we have around us. In the air of our breathing the living quality is killed, is driven out, for the living oxygen would make us faint. Whenever anything more highly living enters into us we become faint. Even an ordinary hypertrophy of growth — if it occurs at a place where it ought not to occur — will make us faint, nay even more than faint. If we were surrounded by living air in which the living oxygen were present, we should go about stunned and benumbed. The oxygen around us must be killed. Nevertheless, by virtue of its native essence it is the bearer of life — that is, of the ethereal. And it becomes the bearer of life the moment it escapes from the sphere of those tasks which are allotted to it inasmuch as it surrounds the human being outwardly, around the senses. As soon as it enters into us through our breathing it becomes alive again. Inside us it must be alive.

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 which 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.

But we must now go farther. I have placed two things side by side; on the one hand the carbon framework, wherein are manifested the workings of the highest spiritual essence which is accessible to us on Earth: the human Ego, or the cosmic spiritual Being which is working in the plants. 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?

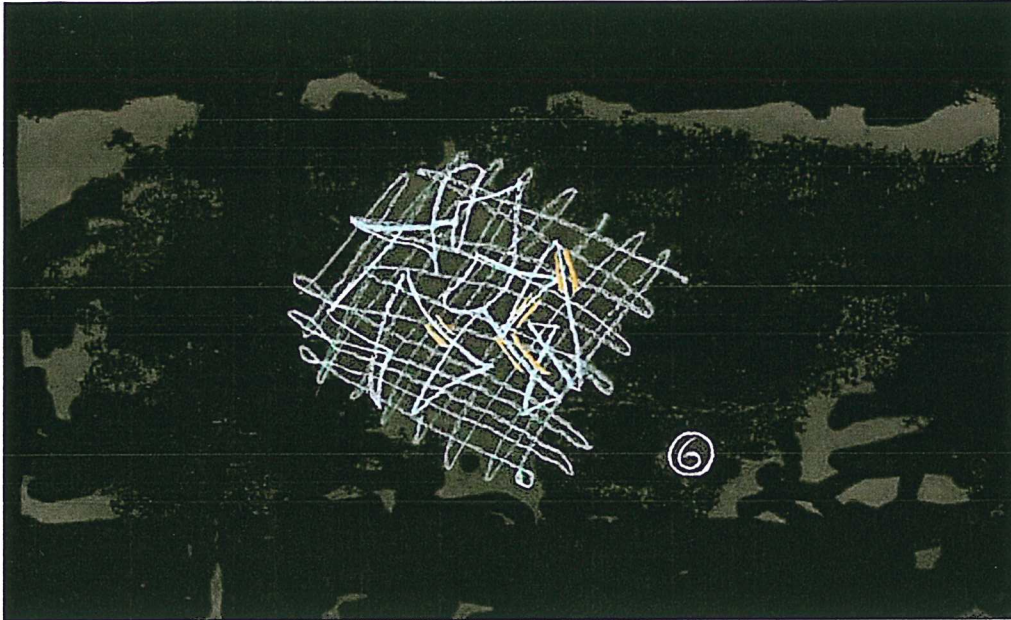


Figure 6

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.

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.

Nitrogen is for ever dragging the living to the spiritual principle. Therefore, in man, nitrogen is so essential to the life of the soul. For the soul itself is the mediator between the Spirit and the mere principle of life. Truly, this nitrogen is a most wonderful thing. If we could trace its paths in the human organism, we should perceive in it once more a complete human being. This "nitrogen-man" actually exists. If we could peel him out of the body he would be the finest ghost you could imagine. For the nitrogen-man imitates to perfection whatever is there in the solid human framework, while on the other hand it flows perpetually into the element of life.

Now you can see into the human breathing process. Through it man receives into himself the oxygen — that is, the ethereal life. Then comes the internal nitrogen, and carries the oxygen everywhere — wherever there is carbon, *i.e.*, wherever there is something formed and figured, albeit in everlasting change and movement. Thither the nitrogen carries the oxygen, so that it may fetch the carbon and get rid of it. Nitrogen is the real mediator, for the oxygen to be turned into carbonic acid and so to be breathed out.

This nitrogen surrounds us on all hands. As you know, we have around us only a small proportion of oxygen, which is the bearer of life, and a far larger proportion of nitrogen—the bearer of the astral spirit. By day we have great need of the oxygen, and by night too we need this oxygen in our environment. But we pay far less attention, whether by day or by night, to the nitrogen. We imagine that we are less in need of it—I mean now the nitrogen in the air we breathe. But it is precisely the nitrogen which has a spiritual relation to us. You might undertake the following experiment.

Put a human being in a given space filled with air, and then remove a small quantity of nitrogen from the air that fills the space, thus making the air around him slightly poorer in nitrogen than it is in normal life. If the experiment could be done carefully enough, you would convince yourselves that the nitrogen is immediately replaced. If not from without, then, as you could prove, it would be replaced from *within* the human being. He himself would have to give it off, in order to bring it back again into that quantitative condition to which, as nitrogen, it is accustomed. As human beings we must establish the right percentage-relationship between our whole inner nature and the nitrogen that surrounds us. It will not do for the nitrogen around us to be decreased. True, in a certain sense it would still suffice us. We do not actually need to breathe nitrogen. But for the spiritual relation, which is no less a reality, only the quantity of nitrogen to which we are accustomed in the air is right and proper. You see from this how strongly nitrogen plays over into the spiritual realm.

At this point I think you will have a true idea, of the necessity of nitrogen for the life of plants. The plant as it stands before us in the soul has only a physical and an ether-body; unlike the animal, it has not an astral body within it. Nevertheless, outside it the astral must be there on all hands. The plant would never blossom if the astral did not touch it from outside. Though it does not absorb it (as man and the animals do) nevertheless, the plant must be touched by the astral from outside. The astral is everywhere, and nitrogen itself — the bearer of the astral — is everywhere, moving about as a corpse in the air. But the moment it comes into the Earth, it is alive again. Just as the oxygen does, so too the nitrogen becomes alive; nay more it becomes sentient and sensitive inside the Earth. Strange as it may sound to the materialist madcaps of to-day, nitrogen not only becomes alive but *sensitive* inside the Earth; and this is of the greatest importance for agriculture. Nitrogen becomes the bearer of that mysterious sensitiveness which is poured out over the whole life of the Earth.

It is the nitrogen which senses whether there is the proper quantity of water in a given district of the Earth. If so, it has a sympathetic feeling. If there is too little water, it has a feeling of antipathy. It has a sympathetic feeling if the right plants are there for the given soil. In a word, nitrogen pours out over all things a kind of sensitive life. And above all, you will remember what I told you yesterday and in the previous lectures: how the planets, Saturn, Sun, Moon, etc., have an influence on the formation and life of plants. You might say, nobody knows of that! It is quite true, for ordinary life you can say so. Nobody knows! But the nitrogen that is everywhere present — the nitrogen knows very well indeed, and knows it quite correctly. Nitrogen is not unconscious of that which comes from the Stars and works itself out in the life of plants, in the life of Earth. Nitrogen is the sensitive mediator, even as in our human nerves-and-senses system it is the nitrogen which mediates for our sensation. Nitrogen is verily *the bearer of sensation*. So you can penetrate into the intimate life of Nature if you can see the nitrogen everywhere, moving about like flowing, fluctuating feelings. We shall find the Treatment of nitrogen, above all, infinitely important for the life of plants. These things we shall enter into later. Now, however, one thing more is necessary.

You have seen how there is a living interplay. On the one hand there is that which works out of the Spirit in the *carbon-principle*, taking an form as of a scaffolding or framework. This is in constant interplay with what works out of the astral in the *nitrogen-principle*, permeating the framework with inner life, making it sentient. And in all this, life itself is working through the *oxygen-principle*. But these things can only work together in the earthly realm inasmuch as it is permeated by yet another principle, which for our physical world establishes the connection with the wide spaces of the Cosmos.

For earthly life it is impossible that the Earth should wander through the Cosmos as a solid thing, separate from the surrounding Universe. If the Earth did so, it would be like a man who lived on a farm but wanted to remain independent, leaving outside him all is growing in the fields. If he is sensible, he will not do so! There are many things out in the fields to-day, which in the near future will be in the stomachs of this honoured company, and — thence in one way or another — it will find its way back again on to the fields. As human beings we cannot truly say that we are separate. We cannot sever ourselves. We are united with our surroundings — we belong to our environment. As my little finger belongs to me, so do the things that are around us naturally belong to the whole human being. There must be constant interchange of substance, and so it must be between the Earth — with all its creatures — and the entire Universe. All that is living in physical forms upon the Earth must eventually be led back again into the great Universe. It must be able to be purified and cleansed, so to speak, in the universal All. So now we have the following:—

To begin with, we have what I sketched before in blue (**Diagram 6**), the carbon-framework. Then there is that which you see here 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.

But now, all that is thus developed in the living creature, structurally as in a fine and delicate design, must eventually be able to vanish again. It is not the Spirit that vanishes, but that which the Spirit has built into the carbon, drawing the life to itself out of the oxygen as it does so. This must be able once more to disappear. Not only in the sense that it vanishes on Earth; it must be able to vanish *into the Cosmos*, into the universal All.

This is achieved by a substance which is as nearly as possible akin to the physical and yet again as nearly akin to the spiritual and that is *hydrogen*. Truly, in hydrogen — although it is itself the finest of physical elements — the physical flows outward, utterly broken and scattered, and carried once more by the sulphur out into the void, into the indistinguishable realms of the Cosmos.

We may describe the process thus: In all these structures, the Spiritual has become physical. There it is living in the body astrally, there it is living in its image, as the Spirit or the Ego — living in a physical way as Spirit transmuted into the physical. After a time, however, it no longer feels comfortable there. It wants to dissolve again. And now once more — moistening itself with sulphur — it needs a substance wherein it can take its leave of all structure and definition, and find its way outward into the undefined chaos of the universal All, where there is nothing more of this organisation or that.

Now the substance which is so near to the Spiritual on the one hand and to the substantial on the other, is hydrogen. Hydrogen carries out again into the far spaces of the Universe all that is *formed*, and *alive*, and *astral*. Hydrogen carries it upward and outward, till it becomes of such a nature that it can be received out of the Universe once more, as we described above. It is hydrogen which dissolves everything away.

So then we have these five substances. They, to begin with, represent what works and weaves in the living — and in the apparently dead, which after all is only transiently dead. Sulphur, carbon, hydrogen, oxygen, nitrogen: each of these materials is inwardly related to a specific spiritual principle. They are therefore very different from what our modern chemists would relate. Our chemists speak only of the corpses of the substances — not of the real substances, which we must rather learn to know as sentient and living entities, with the single exception of hydrogen. Precisely because hydrogen is apparently the thinnest element — with the least atomic weight — it is really the least spiritual of all.