

## AGRICULTURE

### LECTURE 2. - 10th June, 1924,

In these first lectures we shall bring together, from the field of knowledge of conditions which go to promote a healthy Agriculture, those which are necessary in order to enable us to reach certain practical considerations which are to be realised in immediate application and which can only have significance when being so applied. To do so **we have to enquire at the very outset how the products of Agriculture come into being and what is their connection with the Universe as a whole.** Now a farm or agricultural estate comes to full expression as a 'farm' the best sense of the word if it can be regarded as being a kind of separate individuality" a self-contained individuality, This is the condition which every agricultural estate or farm should approach as near as possible, although it cannot be completely attained. In other words everything that is needed to bring forth agricultural products should be supplied by the farm itself which includes, of course, the necessary cattle and live stock.

Anything brought in from outside, such as manure and the like ought under ideal conditions of Agriculture to be regarded rather as medicine for use in the case of sickness. A sound farm should be able to bring forth from itself everything that it needs,. We shall see later why this is quite the natural thing as long as we neglect the inner nature and essence of things and regard them only from their outer material aspect, so long will it be legitimate to ask: Does it really matter whether cow-manure is taken from the neighbouring farm or from one's own steading? Although it may be impossible to carry this out strictly it is important to hold before one the ideal of a self-contained farm. You will find some justification for this statement if you consider first the earth from which our farm arises and secondly the factors which work in upon the earth from the universe. It is usual to speak of these factors in very abstract terms. People are aware it is true, that the light and warmth of the sun, and all the meteorological phenomena connected with these, have a particular bearing upon the type of vegetation produced in a given area, But modern views can give no further details nor throw any further light on the matter because they do not penetrate into to the underlying facts. Let us therefore start from the standpoint which embraces the fact that the basis of all Agriculture is the soil of the earth.

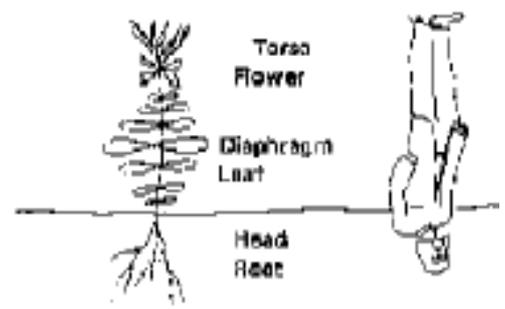
This soil - I will indicate it schematically by this straight line (see drawing no. 2) is generally looked upon as being something purely mineral into which at the best organic substance has entered either because humus has been formed or manure has been introduced. **The idea that the soil not only contains added organic substance but also has itself a plant-like nature and even contains an astral activity;** such an idea has never been considered, still less conceded. And if we go a step further and consider how this inner life of the soil in the delicate balancing of its distribution is quite different in summer from what it is in winter, we come to subjects which are of enormous importance in practical life to which no attention is paid to-day. If you start by considering the soil then you must bear in mind the fact that it is a kind of organ within that organism which manifests itself wherever the growth of nature appears, The earth surface is really an organ, an organ which, if you care to you may compare with the human diaphragm. We may put the matter broadly in this way ( it is not quite exact but will give the right idea): Above the diaphragm there are in man certain organs, the head in particular, and the processes of breathing and circulation which work up into the head. Under the diaphragm are other organs Now if we compare the earth surface with the human diaphragm we must say: The individuality represented by our farm, having the earth surface for its diaphragm has its head under the earth, while we and all the animals live in its belly. Above the surface of the earth, is really what may be regarded as the bowels of what I will now call agricultural-individuality". On a farm we are walking about inside the belly of the farm, and the plants grow upwards within this belly. Thus we are dealing with an individuality which is standing on its head, and

#### Soil contains astral activity

In the light of what was said in the first lecture regarding the organisation of the spiritual bodies and the kingdoms of nature, this can seem like a contradictory statement. The mineral kingdom as such does not internalise the etheric or astral bodies however in the 'body' of the soil interspersed between the soil particles there are many things which carry the etheric and astral activities into the soil. Water, humus, and the various elements of the air and mineral nitrogen are all carriers of the etheric or astrality into the soil.

#### Plant as an upturned Human

This idea is not unique to RS. Hindu understanding of life uses the same image. to show the relationships between the human organisation and the plant.

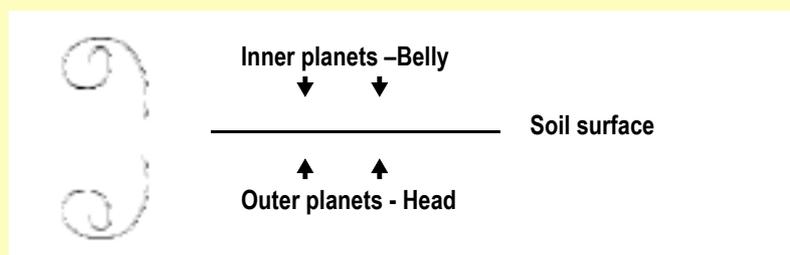


which is only rightly looked at if so understood, especially as regards its relation to Man. In relation to animals, the situation, as we shall see later on, is slightly different.

Now why do I say that the \*agricultural-individuality" stands on its head?

I do so because the air, vapours and warmth which are in the immediate neighbourhood of the soil and from which both man and the plants derive air, moisture and warmth - all this corresponds to the abdominal organs in the human body. On the other hand every thing that takes place within earth, under the soil, affects the general growth of plants in the same way as our head affects our organism - especially in childhood, but also throughout the whole of our life. Thus there is a constant and very living interplay of supra-terrestrial and sub-terrestrial activities.

The forces at work above the earth are immediately dependent upon what we will regard for the time being localised on the planets **Moon, Mercury and Venus**. These planets in strengthening and modifying the effects of the Sun exercise their influence on all that is above the earth surface, while **the more distant planets lying outside the earth's path round the Sun** strengthen and modify the effects of the solar influences **which penetrate upwards through the earth**. Thus the growth of plants is affected by distant heavens in so far as it takes place underground, and by the nearer heavens in so far as it takes place above ground; and **the influences upon vegetable growth coming from the expanses of the Cosmos do not shine directly down upon the earth but are first absorbed by the earth which then causes them to radiate upwards**. What come from beneath as good or bad vegetable growth are really the cosmic influences which are reflected from below; whereas in the air and water above the earth the Cosmos exercises its power directly. **The direct cosmic in-streaming is stored up beneath the earth's surface**, and from there it works back. The inherent qualities of the soil affecting the growth of plants are dependent upon these stored up influences. (Later we shall consider the case of the animals). The soil still retains in it the effects of influences dependent upon the most remote parts of the Cosmos which need to be considered in connection with the Earth. These effects are found in what we know generally as sand and rock; the substances which do not absorb water, which are ordinarily supposed to contain no nutritive elements whatsoever and



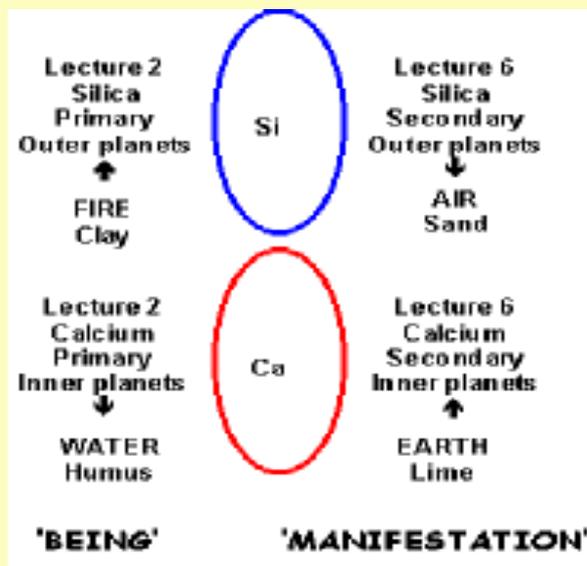
This paragraph is the first step in what I call the Great Biodynamic Contradiction. In this lecture RS develops this picture, however in lecture 6 he clearly states that the inner planets work from within the earth outwards and the outer planets work from above the soil downwards.

I take the approach that both these statements are correct and that we need to develop our understanding to the point of see how they are right.

There are a couple of ways we can approach this concept. Seeing as though this concept is following on directly from the 'upturned human' picture, and that later in this lecture RS restates this same picture in regards to the body of the cow, it is fair to take this image simply in that context. In his medical lectures RS, works upon the basis, for humans, that the metabolic forces work upwards towards the head and the head forces work downwards towards the metabolic processes. They meet in the middle and together support the working of the rhythmic heart lung system.

It would be nice to be able to leave this as this pleasant metaphor, however RS continues to provide specific details of how these two streams of activity work intimately on plant growth, that suggest a more complex fourfold understanding is required.

**The direct cosmic in-streaming is stored up beneath the earths surface**



This is an indication that these planetary activities are part of a ongoing stream of activity that comes from the stars via the planets into the Earth, stored there and then radiated back out. It therefore seems appropriate to view the activities described here as part of a cycle. If we read carefully we can see both parts of the cycle described in this lecture and more clearly outlined in the sixth

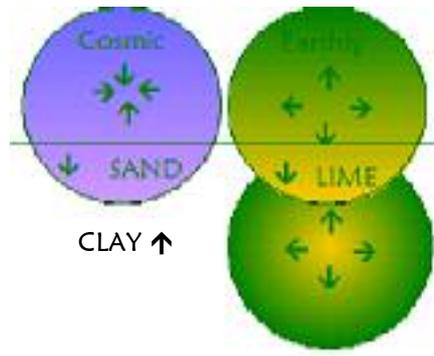
lecture. I provided an explanation of this in "From lecture 1 to Lecture 2". A diagram showing the four fold processes, we are presented with here is repeated on the next page.



being caught up underground must be able to flow upwards again, and the substance which brings this about is clay. Clay is the mediator through which the cosmic activity in the soil is enabled to work from below upwards. In actual practice this will give us the key to the handling of both clay soil and sandy soil according to the particular way we may wish to cultivate. But we must first know what is actually happening. How clay is to be described and treated in order to make it fertile are important but secondary considerations, **The first and foremost thing to know about clay is that it promotes the cosmic upward flow.**

However this cosmic upward flow is not enough by itself. There must also be present the opposite, which I could call the earthly or terrestrial element streaming downwards. All that undergoes a kind of external digestion in the "belly" ( the processes above the surface throughout Summer and winter are indeed a kind of digestion in relation in the growth of plants!) has to be drawn down into the earth. All forces produced by the action of **water and air above the Earth and also the substances in delicate homoeopathic distribution** called from there are drawn down into the earth by lime presented in it in greater or smaller proportions. The lime content of the soil and the distribution of lime in homoeopathic dilution above the surface - these are the factors which have the task of leading the terrestrial ("belly" Ed) forces down into the soil.

These things will take on a very different aspect in future when we shall have a real science concerning them and not only the scientific guesswork of today: it will be possible then to give exact information. We shall then know that there is a great, an immense difference between the warmth that exists above the surface of the Earth and which stands within the sphere of the influence of the Sun, Venus Mercury and Moon, and the warmth which makes itself felt within earth and which stands under the influence of Mars, Jupiter and Saturn. These two kinds of warmth which we may call the "blossom and leaf warmth" and the "root-warmth" respectively, are completely different from one another - so much so, indeed that we can describe the warmth above the Earth as a "dead" warmth, the warmth below the Earths surface a "living" warmth. The warmth below the surface, especially during Winter contains an inner vital principle. **If we human beings had to experience in ourselves this living warmth, which works within the soil we should all become immensely stupid** because in order that we may be intelligent beings, dead warmth has to be supplied to our bodies. But at the moment when the limestone and other substances enable warmth to be drawn into the soil and to change from outer into inner warmth it passes over into a condition of gentle aliveness. It is recognised to-day that there is a difference between the air which is above the Earth and that which is below the surface, but the difference between warmth above the Earth and that below the surface has been overlooked, It is generally known that the air



Firstly we are told that the Silica / outer planetary processes are drawn into the soil by the sandy particles and then that for these forces to move upward again we need clay.

**"The first and foremost thing to know about clay is that it promotes the cosmic upward flow"**

This upward flow of activity is interesting as late in lecture four RS suggests that this is achieved as a pulling from above. So while the sand draws down, we are challenged to see the clay as a releasing agent.

This sentence is also important to remember, as we meet another later which tells us, clay acts as a mediator between calcium and silica. One only has to look at the structure of the Grand Canyon in the USA, to see the granite at the base, clay in the middle and two strata of lime at the top, to see the relative truth of this second statement. It is upon this premise that a discussion is current suggesting that a horn clay preparation made of bentonite (lime) clay is to be used as a balancing facilitator between 500 (Calcium) and 501 (Silica) preparations. My chapter "Thoughts on Horn Clay" (GA pg 216) and associated experiments challenges this notion.

**Homeopathic Calcium**

Callum Coates in "Living Energies" (pg 220), outlines the details of this process. Plants are homeopathic potentiating organisms. Homeopathic potentiating occurs when a substance is placed in an aqueous liquid rhythmically shaken for a period of time. The shaking creates vortexes in the water, which in turn creates small vacuums. In a vacuum the water molecule stretches, allowing for the activity or energy associated with the substance to be come attached to the water molecule, once the vacuum stops. As water saturated with minerals and salts rushes through the vessels of the plant it spirals through vortexes, essentially potentiating the water with the minerals activity. Ultimately the plant retains the minerals and transpires the potentiated water into the atmosphere. This then exists in the air as humidity and dew. This is the homeopathic calcium RS says can act as 'food' for plants.

**Living Warmth and Human stupidity**

For human thought to occur we must have the Ego / internalised spirit incarnated enough to consume the etheric forces in our head. This is why brain cells do not

		☽		
Dead Fire	Dead Air	♀	Living Water	Living Earth
		♀		
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Dead Water	Dead Earth	♂	Living Warmth	Living Light
		♂		
Elemental state		⚔	Etheric forces	

under the Earth contains more carbonic acid, while that above the Earth contains more oxygen; but the reason for this is not known. It is that the air, as it is drawn into the earth, is penetrated by a gentle aliveness. This is true both of warmth and of air. They both receive a tiny spark of life as they pass into the earth. It is different in the case of **water and of the solid earth element** itself. Both of these have less life inside the Earth than they have when above its surface. They become "more dead", they lose something of their life they had outside. But it is precisely this circumstance which exposes them to the influences of the most distant cosmic forces. **The mineral substances have to free themselves from the forces which are working immediately above the surface of the Earth if they wish to be accessible to those far away cosmic forces.** In our epoch this emancipation from the processes in the immediate neighbourhood takes place in the period of the time between the 16th January and 15th February, i.e. in Winter, The time will come when these indications will be acknowledged as exact data. It is at this period of the Winter that within the Earth the formative forces of **crystallisation** reach their full development in the mineral substances. In these days of mid-winter it is a peculiar feature of **the interior of the Earth that it becomes less dependent upon its mineral masses and falls under the influence of the crystallisation forces of the cosmic expanses.**

Now consider what happens, Towards the end of January the mineral substances of the Earth have a greater "longing" than at any other time to reach crystal purity in the economy of nature; and the deeper one goes, the greater one finds this "longing" to be. The plants, absorbed in their own life in the Earth are less open at this time than at any other to the influence of the mineral substances. But for a time before and for a time after this period, (but especially before when the minerals are preparing to perfect their crystal shape and purity) they are of the utmost importance to the growth of plants. It is then that they throw out forces which are of extreme importance for plant growth. Thus some time in November and December there is a point of time when the mineral forces at

regenerate very easily, as the Ego and Astral bodies have used up the etheric forces in their activity. We only need to look to a near term pregnant woman to observe what happens when the etheric body works too strongly. Due to the strength of the babies etheric body, the woman's higher bodies, are usually pushed out somewhat. The mother then becomes much more dreamy and unable to focus on anything for very long. She sits in a white aura, smiling. This is the etheric body dominating and why women are often more content to be intuitive than to incarnate the Ego necessary for analytical thought.

#### Living & Dead Elements and Ethers

This passage suggests that for the elements to move from their natural homes they must be taken up by the etheric activity and be enlivened. I suspect we need to combine what I have said here and what I said on the last page, regarding free and bound ethers. So we have dead elements, as well as living and dead ethers. Dead ethers being those in the atmosphere while the living ethers are either just above the soil or in the soil.

I have not found any useful application for this knowledge as yet, so I have not found the need to delve into enough to harmonise the confusion that stands here.

**The mineral substances have to free themselves from the forces which are working immediately above the surface of the Earth if they wish to be accessible to those far away cosmic forces. "**

This phrase is explained in a fuller way in the second lecture of the cycle "The Four Seasons and the Archangels". In that book RS outlines the three fold nature of the Earth, much as is done here, however he talks further of the details of the journey through the seasons. He describes the 3 fold nature in the alchemical terms of Sulphur, Mercury and Salt. These terms illustrate the combusive expansive nature of the above ground metabolic processes, the adaptive nature of the rhythmic system and the consolidating nature of the below ground 'nerve sense' system.

In this context the term 'crystallisation' refers to the consolidating 'salt' processes of the winter which occurs in the soil. The following passage illustrates this more clearly

**"In this way we cannot arrive at the truth. We need to recognize that the earth is a single whole, most firmly consolidated during winter through its salt formation, its mercurial formation and its ash formation.**

Let us then ask what the whole nature of the earth signifies when we look at it not from the flea's point of view, but in relation to the cosmos.

We will first consider salt formation, taking this in the widest sense to connote a physical deposit, exemplified in the way ordinary cooking salt, dissolved in a glass of water, will separate out as a deposit on the bottom of the glass. (I will not go into the chemical side of this, though the result would be the same if I did.) Now a salt deposit of this kind has the characteristic of being porous, as it were, to the spirit. Where there is a salt deposit the spiritual element has a clear field of entry. In midwinter, accordingly, when the earth consolidates itself through salt formation, the effect is first of all that the elemental beings who are united with the earth have, one might say, an agreeable abode within. But spiritual elements of another kind are also drawn in from the cosmos, and are able to dwell in the salt crust which lies immediately below the earth's surface. Here, in this salt crust, the moon forces are particularly active—I mean the remains of those moon forces which were left behind, as I have often mentioned, when the moon separated from the earth.

These moon forces are active in the earth chiefly because of the salt present in it. So in winter—beneath the snow cover which strives in one direction, one might say towards the quicksilver form, and in the other direction passes down into the salt element—we have the solid earth substance, the salt, permeated with spirituality. In winter the earth does indeed become spiritual in itself through the consolidating influence, especially, of its salt content.

work under the Earth are particularly propitious to the growth of plants. The question therefore arises: **How can this best be utilised for the growth of plants?** Some day it will become evident that by utilising this knowledge we are able to guide the growth of plants. I will say this now: **That in the case of a soil which does not in itself promote the required upward movement of forces which ought to work upwards in Winter period, it is well to add clay in a proper proportion.** ( I shall indicate this proportion later on.) In this way we enable the soil to carry those forces, upwards to make it effective in the realm of plant growth above the Earth; before the forces of the minerals have reached their maximum effects for themselves, which will not be until the January or February period. (These forces show themselves outwardly - for those who can read their story - in snow crystals.) It may be noted that the power of these forces become stronger and stronger the deeper we go into interior of the Earth.

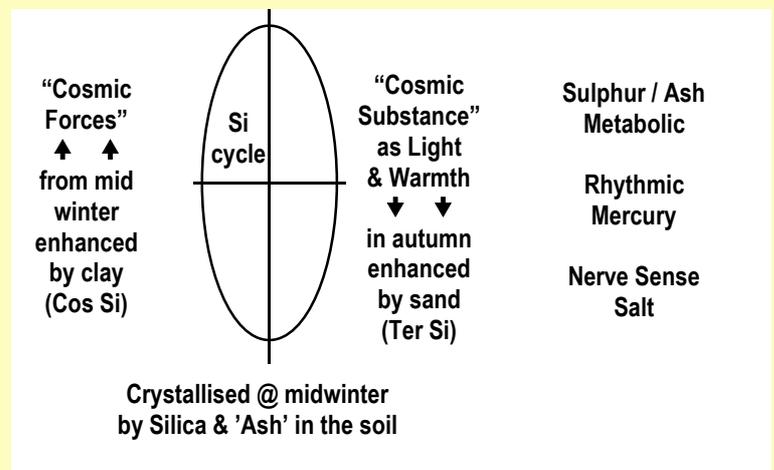
In this way what seems to most people recondite can give us insight of the greatest positive value and practical help, where we should otherwise be working at random. Indeed we must realise clearly that the cultivated ground together with what lies under the surface of the Earth forms an individuality living also within the element of time (i.e. living through the four seasons) and that the life of the Earth still is particularly strong during Winter, whereas in Summer it undergoes a kind of death.

Now with regard to the cultivation of the soil there is a point of great importance which must be thoroughly understood. It is a point I have often dealt with amongst Anthroposophists. It is that we know the conditions which the forces of the cosmic spaces can work upon the earthly realm. Let us begin with seed formation. The seed which gives rise to the embryo of the plant is generally regarded as a molecular structure of exceptional complexity, and science lays great stress upon this interpretation. The molecules it is said have a certain structure, in simple molecules it is simple, in complicated molecules it becomes more and more complex, until we come to the extreme complexity of the albuminous or protein molecule. People stand in wonder and astonishment at the enormous complexity of the structure supposed to exist in the seed. They do so because they reason

Now water—that is, cosmic quicksilver—has the inner, tendency to shape itself spherically. We can see this inner tendency everywhere. And because of this the earth in midwinter is enabled not only to solidify through its salt content and to permeate the salt with spirit, but also to vivify the spiritualized substance and to lead it over into the realm of life. In winter the whole surface of the earth is reinvigorated. The quicksilver principle, working into the spiritualized salt, activates everywhere this tendency towards new life. Below the earth's surface, in winter, there is a tremendous re-enlivening of the earth's capacity to produce life.

This life, however, would become a moon life, for it is chiefly the moon forces that are active in it. But because ash falls down from the seeds of plants, so that everything I have just described is impregnated with ash, something is present which keeps the whole process under the control of the earth.

The plants have striven upwards into the sulphur process, and out of this process the ash has descended. This is what draws the plant back to earth after it has striven up into the etheric-spiritual. So in the depths of winter we have on the earth's surface not only the tendency to absorb the spirit and to reinvigorate itself, but also the tendency to transform what is of a moon nature into earth nature. Through the remains of the fallen ash the moon is compelled to promote earthly life, not moon life”



We are encouraged to enter into the experience of the Earth through the seasons, and their expansion and contraction processes.

We can see this expansion and contraction through plant growth. From mid winter the soil life begins with insects becoming active first in the soil. They burst above the soil surface in spring along with the buds and flowers. The early fruits that ripen before mid summer are either watery berries or free stone peaches and crisp non keeping apples. RS says of this time that the Sulp / Mercury & Salt processes are all active above the Earth.

Once we pass mid summer the fruit becomes increasingly more dense till we have the nuts becoming ready after the autumn equinox. This ripening process is achieved through the light and warmth of the Sulphur region creating the 'ash' spoken of in the earlier quote. The leaves fall and the life of the soil contracts into the Earth. All is dead above ground but the insects and roots continue their growth for some time. The light and warmth processes of the recent season are drawn to the ground, with the help of the sand, as we know from the Agriculture text. ( Note the Ash is said to do this in the Archangels lectures.) Many growers know that the previous autumn conditions have a large effect on what reappears the following season as the plants flowering and fruit set.

What is emphasised in the last paragraph of this quote is the way the Ash ( Ter Si ) processes of the earlier season, catalysis the life processes and anchor them to the earth. It is this activated Moon activity that can then work upwards the following spring with the help of clay.

**Seed Chaos**

There has long been a debate as to whether this chaos occurs at fertilisation or when the seed is sown. I am of the opinion that RS is talking about the time of fertilisation.

as follows. The albumen (or protein) molecule, they say, must be enormously complex, and since its structure was determined by the embryonic conditions of the seed, the latter's microscopic or ultra-microscopic content must also have a structure of enormous complexity. Well it is complex indeed in the beginning. As the earthly albumen is formed, its molecular structure is driven to the utmost complexity; but this alone would never give rise to a new organism. For the organism arising from the seed does not proceed by a mere continuation in the off- spring of what was present in the parent plant or animal.

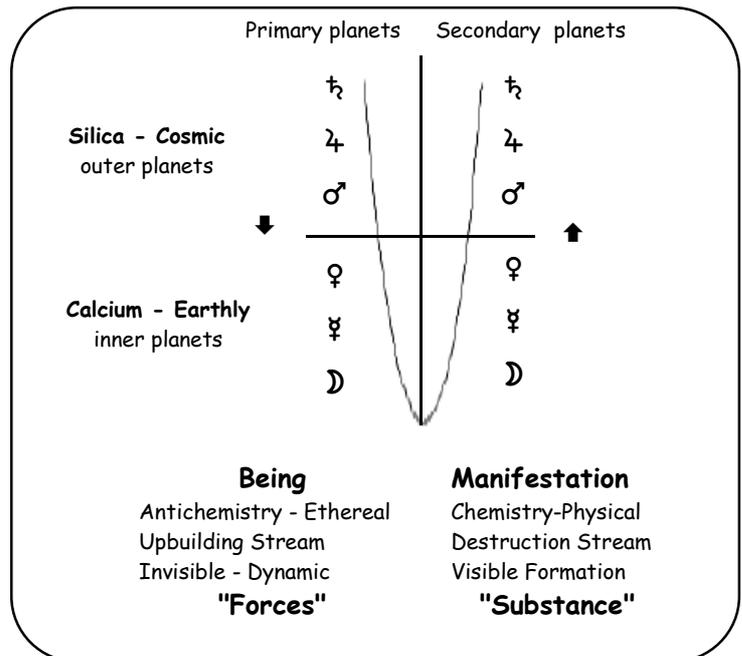
What happens is that when the **embryonic structure** has reached the highest stage of complexity in the earth domain it falls to pieces and becomes a "little chaos". It breaks up and dissolves, one might say, into "world-dust". And when this little chaos of world-dust is there, the whole surrounding cosmos begins to work upon it to stamp it with its own image and to build up in it a structure conditioned by the forces of the Universe working in upon it from every side (see drawing no. 3). Thus the seed becomes an image of the Cosmos. Every time this happens, and seed formation is carried through to the point of chaos, the new organism is built up from the seed-chaos by the activity of the cosmos. The parent organism has only the tendency to bring the seed to such cosmic position that through its affinity with this cosmic position **the cosmic forces will act in the proper direction so that, eg a dandelion will give rise to another dandelion and not a berberis.**

But the new thing that is built up is always the image of some cosmic constellation. It is built up out of the cosmos. And if in the Earth we would make effective the forces of the cosmos, we must drive the earthly elements into the state of greatest possible chaos. This has to be the case whenever we want the cosmos to act upon our Earth. In the case of plant-growth this is in a certain sense provided for by nature herself. But just because every new organism is built up by the Cosmos it is necessary that the cosmic principles must be allowed freedom to work in the organisms until the seed-formation is completed.

If for example, we plant the seed of a given plant in the earth the seed contains the impress of the whole cosmos from a particular cosmic direction , which means

The embryonic structure is the embryo present in the pistil. At the point of readiness for conception or fertilisation the cosmic forces can begin to work.

We need to remember that earlier RS talked of the Calcium and Silica processes in the terms of Reproduction and Nutrition, respectively. In this passage we are being provided with the image of when the Calcium Earthly force of reproduction is being handed over to the Cosmic imprint from the outer planets. A confusion can arise here when we take the Earthly reproductive process and the upward moving Cosmic streams carrying of the plant archetype as the same thing. Geothe and more latterly, Dr Lievegeod have presented us with a detailed image for the journey a plant must take to go from seed to seed.



Saturn 1	Archetype	Seed	Saturn 2
Jupiter 1	Plastic forces	Essential Oils	Jupiter 2
Mars 1	Growth in Space	Forming Protein	Mars 2
Venus 1	Nutrition	Excretion	Venus 2
Mercury 1	Sap flow	Supporting Organs	Mercury 2
Moon 1	Germination	Intensification	Moon 2

Lievegeod's book on this subject is available on the internet at <http://www.oregonbd.org/planets.htm>

In this picture, we see that the cosmic impulse that comes from a particular star, the Archetype, is anchored into creation, when the force from the star moves through the Saturn 1 sphere, before moving onwards through the other planetary spheres, before entering the atmosphere and the Earth.

RS tells us the Reproductive power of the plant is given to it, by the Moon. This reproductive force first shows in the cell division of the new seed and latter in tissue formation. This Saturnian archetypal imprint is hidden as the hidden sculpture at every stage of growth. The formless rampant Moon growth forces would grow rampantly in all directions if it was not held on track by the Saturn 1 force. **"the whole surrounding cosmos begins to work upon it to stamp it with its own image and to build up in it a structure conditioned by the forces of the Universe working in upon it from every side (see drawing no. 3). Thus the seed becomes an image of the Cosmos."**

This passage is telling us that once the plant has bought the reproductive process to a certain state of maturity, it is the cosmic forces active in the environment at the time's turn to play their part. This is Lievegeod's secondary outer planets job. The first 'Being'

that it came under the influence of a particular constellation and received its particular form. At the moment when the seed is placed in the soil it is strongly worked upon by **the terrestrial ("belly Ed.) forces**, and it is filled with the longing to deny the cosmic forces, in order that it may **spread and grow in all directions**. For the forces above the surface of the Earth do not want the plant to retain this cosmic form. The seed had to be driven to the point of chaos; but now that the plant is sprouting it is necessary to oppose the terrestrial to the cosmic forces which live as the form of the plant inside the seed, For the cosmic forces must be opposed and balanced, as it were, by the terrestrial forces. We must help the plant to become more akin to the Earth in its growth. This can only be done by introducing into the plant some form of living earthly matter **which has not yet reached the state of chaos and seed formation**, life which has been held up in a plant before the seeds have been formed. For this purpose a rich **humus** formation comes to man's assistance In those districts that are fortunate enough to possess it. Man can hardly find any artificial substitute for the fertility given to the soil by Nature through humus. What causes formation of humus? It arises from the absorption of remnants of living plants into the whole process of Nature, These remnants have not yet reached the state of chaos and respect the cosmic forces, as it were. **If humus is used for the growth of plants the terrestrial forces are held fast within them.** (*Cos Ca*) The cosmic forces (*Cos Si*) then work only in the upward stream that terminates in seed-formation. While the terrestrial forces work in the development of flowers, leaf and so on, the cosmos only radiates its influence into all this.

Let us suppose that we have before us a plant growing out of its own root. At the top end of the stem comes the grain of seed, while the leaves and blossoms spread out sideways. Now, **in the leaf and the blossom the terrestrial element is working in giving shape and filling it with matter (*Cos Ca*)**; the reason why a leaf grows or a grain swells and takes up the substance inside it is to be found in the **terrestrial forces which we lead to the plant and which have not yet reached the point of chaos**. The seed, however whose forces work upwards through the stem (*Cos Si*) - vertically - not rotating around it (*Ter Ca*) (as in the formation of leaves. ed.) radiates the cosmic forces into leaves and blossoms. One can actually see this. We have only to look at the green leaves of a plant. In their shape, in the substances filling them and in their green colour, the leaves bear

phase of this process is a building up and collecting of the necessary forces, while the secondary 'Manifestation' phase is where we see the plant coming into growth. Pollination and fertilisation come about through the Venus 2 and Mars 2 phases, while the development and ripening of the seed come from Jupiter 2 and Saturn 2 respectively. These outer planet forces come from the external environment. These are the outer planet forces outlined more fully in lecture 6, which help the Archetypal impulse of the plant, genotype, to adapt to the environment, phenotype.

The time a seed is placed in the soil, for germination, has been shown to be very influential on the eventual form of the plant. The cosmic influences of the time, eg Full Moon or Moon oppose Saturn, undoubtedly effects the plants future growth. Is this the chaos that is being talked of here though. I am not convinced it is, and a close reading of these passages especially where we are told of what makes good compost clarifies RS meaning.

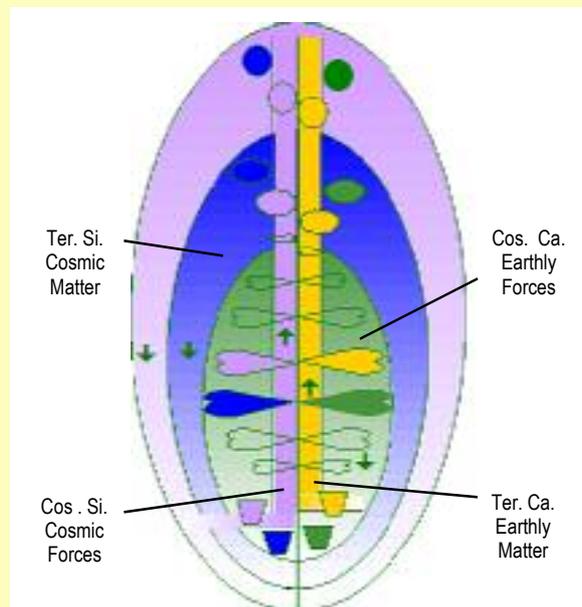
### Humus

Humus is identified as matter which has not yet reached chaos. It has not flowered or set seed. This statement emphasises that the chaos occurs at fertilisation.

In plants which have not reached fertilisation, we are seeing plants which have not yet been touched by the Astrality. Therefore there are more etheric forces still available in the plant waste for the soil. Once a plant comes in contact with the Astrality or spirit, these activities use up the etheric in their own activity. The etheric is like fuel for the manifest existence of the higher bodies. Hence after fertilisation plants do not make such etherically saturated humus.

So when humus is brought to the soil it helps the Earthly forces above the Earth be drawn into the plant and soil. Earlier we read how the Lime draws the terrestrial Calcium to the soil, here we find it is the humus which holds them to the plants. It is the humus in the soil which brings the homeopathic calcium activity, alive in the atmosphere, closer to the plant and soil, so that the etheric activity enters into them more deeply. Humus opens the soil up to more air and water flow but also provides the necessary forces for carbon to be utilised properly in the soil biology.

In the following passages we are given a clear down and up interpretation of the processes. These are of the "Being" or 'Cosmic' side of the growth processes. This information is revisited in the sixth lecture.



the terrestrial element, (*Cos Ca*) But they would not be green if they had not within them the cosmic force of the Sun, And now look at the coloured blossoms. In these the cosmic forces of the Sun is not working alone but is supported by the distant planets, Mars Jupiter and Saturn. (*Cos Si*) If we regard the growth and development of plants from this point of view, we shall see the redness of the rose as the force of Mars, the yellow of the sunflower (so-called only because of its shape) as the force of Jupiter. It should be called the Jupiter flower, for it is the force of Jupiter that reinforces the solar force and brings forth the white and the yellow colours in the flowers. The blue of chickweed or chicory flower is the effect of Saturn reinforcing the effect of the Sun. Thus we can see Mars in the red coloured flower Jupiter in the yellow, Saturn in the blue, while in the green colour of the leaf we see the Sun Itself. But the same powers which appear as colour in the flower are also at work especially strong in the root. Here once more the forces living in the distant planets are active within the soil. If we pull a plant out of the ground we may see that in the roots there is cosmic force, in the blossom mostly the terrestrial element and only in the finest shading by the colour the cosmic element can be seen. The terrestrial forces on the other hand, if living actively in the root cause the root to push out into form. For the form of the plant is determined by factors arising in the realm of earth. It is the terrestrial forces that causes the form to spread. When the root develops and divides, it is due to the terrestrial forces working downwards just as the cosmic forces (in the case of the colour) work upwards. Single roots are therefore cosmic roots, whereas forked roots are due to the terrestrial forces working down into the soil, just as in colour the cosmic forces work upwards into the flowers. And the cosmic force of the Sun stands between the two. The Sun force works principally in the green leaves, in the interaction between blossom and root, and in all that is between the two. Thus the Sun element really belongs to what we have called the diaphragm provided by the surface of the earth; whereas the cosmic element belongs to the interior of the earth and works its way up into the upper part of the plant. The terrestrial element above the earth works downwards and is drawn into the plant with the help of the limestone. Plants which draw down the terrestrial element into their roots through the lime are those whose roots divide in all directions such as all herbs used for fodder, (but not turnips) and such as the sainfoin. Thus it should be possible, looking at the form of a plant and the colour of the flowers to tell how much cosmic forces and how much terrestrial forces are at work in it. Now let us assume that we find some means



Terrestrial ▼ Lime  
Flowers - Ramified Roots  
Radial Flowers

Sun - Leaves ▲▼  
Soil diaphragm

Cosmic ▲ Silica  
Roots - Tap Roots  
Apical dominate flowering  
Colour in flowers  
Flavour in Fruit

of holding back the cosmic forces within the plant, These forces will then be prevented from manifesting it by pushing up into flowers but will live out their life region of the stem of the plant. Now wherein do these cosmic forces reside in the plant? They reside in the silicon. Take the Equisetum. It has this very property of attracting silicon and permeating itself with it. It is 90% silicon. Thus in this plant the cosmic element is present to a tremendous extent. It does not manifest itself in flowers, but in the growth of the lower part of the plant.

Now, let us take the opposite case. Let us suppose that we want to hold back these forces which work upwards from the root through the stem into the leaves and store them up in the region of the root. This possibility is no longer fully open to us in the present epoch of our earth, since genera and species of plants have been so firmly established. Formerly, in ancient epochs when men could easily transform one plant into another this possibility had to come greatly into consideration. Today we consider it only from the point of view of finding out the condition favourable to a given plant. How can we then set about preventing these forces from pushing upwards into blossom and fruit? How can we in addition hold back the development of stem and leaf within the formation of the root? We must place such a plant on sandy soil. For silicon or flint holds back the cosmic forces and even gathers them. Now the potato plant is one in which the growth of leaf and stem is held back. , The potato is a root-stock. The forces that form leaf and stem are held fast in the potato itself. The potato is not a root but a stem which has been held back. Potatoes must therefore be planted on

sandy soil; this is the only way of holding back the cosmic forces in them.

**The ABC of everything concerning the growth of the plant consist therefore, in knowing what in any particular plant is cosmic origin and what is due to terrestrial forces.** How can we make a soil more inclined to condense, as it were, the cosmic forces to retain them in root and leaf? How can we thin them out **so that they can be sucked upwards** into the blossoms and colour them and even into the fruit and permeate them with a delicate taste? For the delicate taste in an apricot or plum is like the colour of a flower, both being due to the cosmic forces which have worked their upward through the plant. In the apple you are literally eating Jupiter, in the plum you are eating Saturn. If modern man were faced with the necessity of producing the innumerable species and varieties of fruit-bearing plants from the much smaller number of original plants existing in primordial times he would not get very far. And we may be thankful that the great majority of our existing fruit trees were brought into existence when mankind still possessed an ancient instinctive wisdom of how to produce new varieties out of the primitive species which then existed. Nowadays these things are done by trial and error. People do not enter into the process with knowledge. And yet a rational method` is the fundamental condition for any possible advance in Agriculture. What our friend Stegemann said in this connection was particularly opposite. He drew attention to the fact that agricultural products are deteriorating in quality. Now you may or may not agree with what I am going to say, but this deterioration is I claim, connected as is the transformation of the human soul with the declining of the Cosmic Kali-Yuga during the last few decades and the decades that are to come. For we are also in the presence of a complete inner transformation of Nature. All that we have inherited and been handed down in the way of natural talents, inherited knowledge, nature and of traditional medical remedies is beginning to lose its significance. **We shall have to acquire new knowledge if we want to penetrate the natural connection of these things. Humanity has no other alternative before it today than either to learn again about the whole web of natural and cosmic connections, or to let both nature and humanity degenerate and die out.** As in the past it is imperative that our knowledge should penetrate to the actual structure of Nature, For example, man knows more or less what happens to air inside the earth but he hardly knows any thing of what happens to light inside the Earth. He does not know that Silicon, the cosmic mineral, takes up light into the Earth and there makes it active, whereas humus, the substance closely allied to terrestrial life does not take up light and make it active in the earth but produces a lightless activity there. But these are the things which will have to become understood and known.

Now, to go further: in any given region of the earth there is not only a particular vegetation but also certain animals live there. For reasons which will appear later on we need not consider human beings for the moment, It is one peculiar fact, and I should be glad to see this put to experimental test as I am quite sure that such a test would confirm it. This

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This is a central challenge to us from RS in our plant management. How can we identify the Cosmic and Terrestrial plant activities and then how can we either enhance them or hold them back in their flowing motion. RS gives us the indication that this is the key to plant species formation. He suggests the plants in our time or of a more fixed nature than in past times, however the question arises as to how much alteration of plant growth is possible in our time. Plant trials I have carried out on Coriander and dahlias show that it is possible to have significant and conscious influence on these processes.



**Unsprayed**

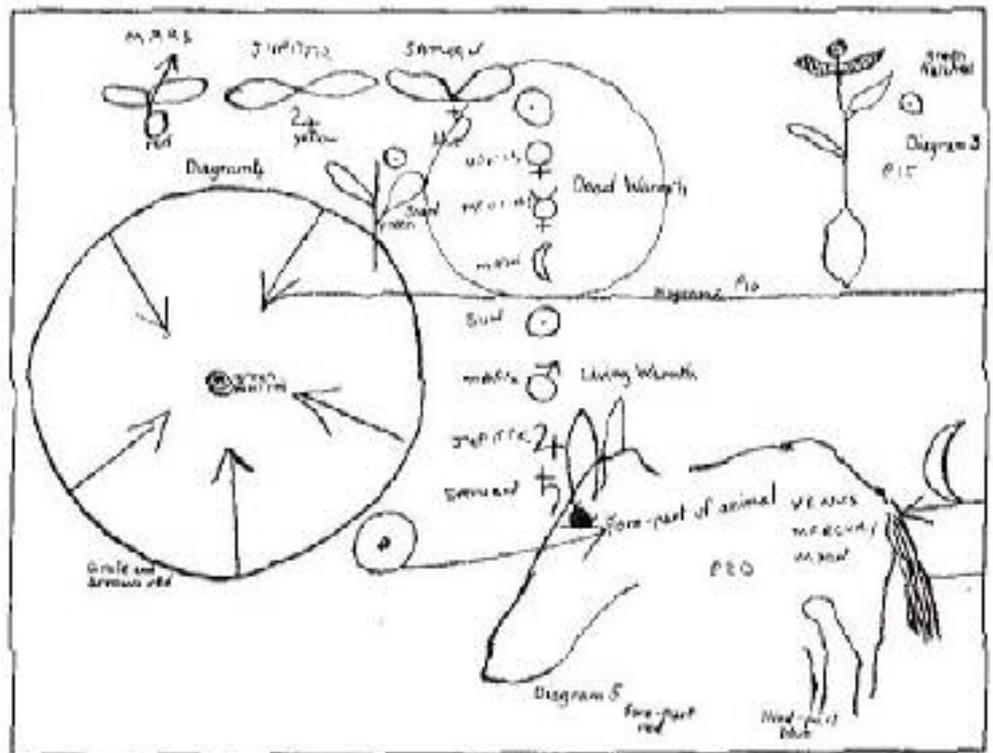


**Sprayed to hold back the upward moving Silica processes**

These pictures show how the strength of the stalks were weakened and laid down, as if pushed from the top. Coriander plants treated in this manner showed the influences of this spray application, were carried through the seed into the next generation of plants, showing in the leaf and seeding processes.

We maybe able to achieve more than RS first expected in this field of endeavor.

fact is that the right quantities of cows, horses and other live-stock on a farm will supply just the necessary amount of manure for the farm to restore to it what has been discharged into "chaos". Moreover the right proportion of horses, cows and pigs will yield the right proportions in the mixture of manures. This is because the animals eat the right proportion of the plant substances yielded by the soil, and because in the course of their organic processes they produce as much manure as is needed to be given back to the soil. And, though it cannot be strictly carried out, I would say that manure of any kind introduced from outside can only be regarded as a curative substance for a farm that has become diseased.



A farm is only healthy if it can supply itself from the manure yielded by its own animals. This of course entails the development of a real knowledge of how many animals of a given sort are necessary for a given farm. But this will be found out as soon as some knowledge returns to us of the inner forces in Nature. To what I said about the "belly" being above the Earth and the "head" being under the Earth, belongs an understanding of the animal organism. For the animal organism is connected with the whole economy of nature. With respect to form and colour structure and consistency of its substance, it is under the influence of the planets., working backwards from the snout the influences are as follows , Saturn Jupiter and Mars affect the region extending from the snout to the heart, the heart is worked upon by the Sun , while the region extending from behind the heart to tail comes under the influences of Venus, Mercury and Moon.

Those who are interested in these things should try to examine the forms of animals from this point of view. For a development of knowledge along these lines would be of enormous importance, Go to a museum, for example, and examine the skeleton of an mammal, In doing so, bear in mind the principle that the structure and build of the head is primarily the result of the direct radiation of the Sun streaming into the mouth. Then you will see that the structure of the head and of the adjoining parts depends upon the way in which the animal exposes itself to the Sun. A lion exposes itself quite differently from a horse: the reason for these differences will be examined later on, Thus the front part of an animal and the structure of its head are directly connected with the Sun's radiation. Now the light of the Sun also reaches the Earth indirectly, by being reflected from the Moon. This too has to be taken into account. The sunlight that is reflected from the Moon is quite ineffectual when it falls on the head of an animal. (These things apply especially to embryonic life). The light reflected from the Moon produces its greatest effect when falling upon the hind parts of the animal. Look at the formation of the skeleton of an animals hind parts and the peculiar polarity in which it stands to the formation of the head. You should develop a feeling for this contrast in form between the animals hind quarters and its head and especially for the insertion of the hind limbs and the rear and the intestinal tract. This contrast between the front and the hindermost parts of the animal is the contrast between Sun and Moon. If you go further you will find that the influence of the Sun stops just short of the heart; that Mars, Jupiter and Saturn are active in the formation of the blood and the head; and that, from the heart backwards the activity of the Moon is reinforced by that of Mercury and Venus. Thus if we imagine ourselves to have picked up the animal, turned it round and set it upside down with its head in the earth we shall have the position invisibly taken by the "agricultural-individuality". The consideration of this formation of the animal enables us to see a relation between the manure produced by the animal and the needs of the earth in which the plants grow which serve as food for the animal. For you will remember that the cosmic forces which act in a plant are guided upwards through it from inside the earth. If, therefore, a plant is

particularly rich in these cosmic forces, and an animal eats it, then the manure which this animal excretes will be particularly well-suited to the soil on which the plant grows. Thus if we learn to grasp the forms of things we shall see in what sense an agricultural unit, or farm is a "self-contained individuality" (or as we have called it an agricultural-individuality") only we have to include in it the necessary livestock.