The Energetic ACTIVITIES

In Biodynamic Agriculture

DR RUDOLF STEINER'S AGRICULTURE COURSE

EDITED BY

Glen Atkinson

The Energetic Activities

of

Biodynamic Agriculture

Based on 8 lectures

given by Dr Rudolf Steiner

June 7 to June 16 1924

Issued in 1938

From the shorthand notes of Dr L Kolisko

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Index

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Forward

It gives me much pleasure to be invited to supply a forward to Glen's reorganisation of the agricultural course, given by Dr. Rudlof Steiner to a group of farmers in June 1924. They had been requesting this meeting for some time, eventually assigning one of them to "sit on Dr. Steiner's door step" until a definite date was set and agreed to. Dr. Steiner had been lecturing throughout Europe on the spiritual aspects of life on Earth in its many aspects so they were sure that he had many valuable insights into agricultural life. At that time people were noticing that food did not taste as it used to.

At this time in Europe the ideas and observations of industrial chemist Justus von Liebig were becoming widespread in agricultural practice. He noticed that the addition of certain minerals to poor soils achieved an increase in out-put. What was not realised at that time was the work of the biology of the soil in making minerals in the soil available to plants. To make them available to plants he considered that it was necessary to make them water soluble so the minerals were prepared as soluble salts. The result in practice being noticed was a reduction in flavour. In more recent years tables have been produced demonstration how there is actually a reduction in many vital minerals and elements.

What Dr. Steiner offered was a way of enlivening the biological life of the soil so that fruit, vegetables and all other food plants returned to their optimum tastes and food values. At that time Dr. Steiner was talking to many and diverse groups about how spirit works within matter. In fact, without spirit matter would be dead. Thus what was presented seemed somewhat aphoristic as it was assumed that the audience was already aware of what he was saying to others. His express intention was that the notes of what he said to the group of farmers be worked on within the farmer's group before being made available to a wider public. What Glen is offering here is such a work. This is a result of working for many years meditatively and practically to fill in what appears to be a number of missing steps in logical progression.

Glen and I first met while I was working at the Weleda gardens in Havelock North where I was the Biodynamic gardener growing the herbs that were required at the time. Since that time Glen and I have share many aspects of our Biodynamic journey through life. It has greatly enriched my life and challenged me to achieve more than might have been the case. It is very much my hope that this will apply to all who read and study this work.

Peter Bacchus— 1 August 2016

Introduction

The Agriculture Lectures were given within the last year of Dr Steiner's life and during a period of seriously ill health. There were doubts he would be able to even present these lectures. Apart from his health issues, these lectures were squeezed into his extremely busy schedule, and not reviewed by him before he died. On top of this we also need to consider the limitations the translation process brings to the work.

This course of lectures, when read in isolation, presents several significant problems of comprehension. These confusions have not been adequately addressed in the subsequent 90 years, which has lead to important parts of the course 'being set aside', by many community leaders. Even worse, a garbled version of the story Dr Steiner presented, has developed and is now widely propagated, as 'quasi official'. (27)

Given this long intervening time period, and the stagnant state of Biodynamic theology and practice, it is appropriate to consider these lectures as 'unedited by the author', which in turn leaves open the possibility of some subsequent editing. It is upon this premise, that I have taken the liberty to reorganise and edit sections of the text, in a manner Dr Steiner may have done, with the aim of producing a cohesive manuscript, compatible with the world view he presented in his medical lecture series', given before and after the Agriculture lectures.

This re-organisation aims to provide resolutions for understanding the pivotal role the energetic 'bodies', and their subsequent manifestation as the Cosmic and Earthly activities, have upon all the practical suggestions made in the course.

I have made my additions in the first person, and left any adjustments or additions to the original text, in italics, so that back referencing can be made. The base text is from the 1938 translation of Lili Koliskos shorthand notes of the course. This is available in full at the www.garudabd.org online books section.

To provide a fuller picture, I have added parts of Dave Robison's translation of Dr Lievegoed's 1951 masterpiece (20) on the double planetary activities, as this expands on the brief planetary indications in the original text.

The diagrams I provide, are orientated towards the northern hemisphere Zenith and are thus best viewed facing south. They can also be orientated to the Earth's north magnetic pole. Copies of this orientation are available in my 2010 writings. (24)
Glen Atkinson

The Energetic Activities

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.

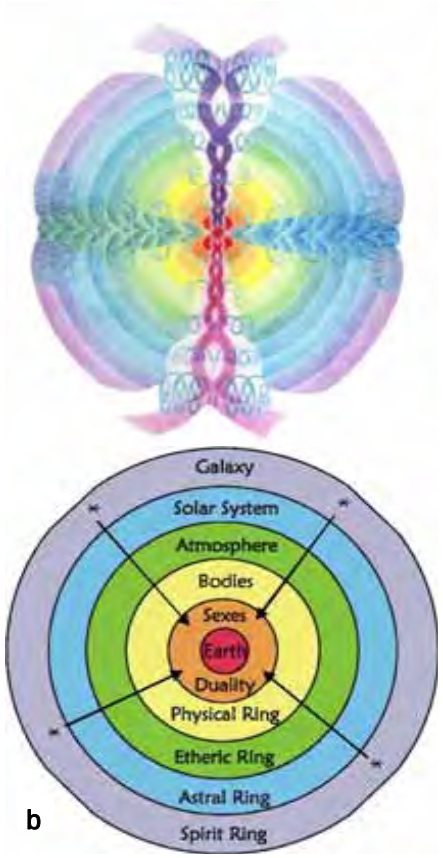
This course of lectures comes after many years of presentations, and given the short time available to us, only the briefest of outlines to this large subject, can be given. To aid in clarifying the complex interactions we meet in nature, we must use a language that may seem uncommon to some readers. The aim of this language, is to provide a pathway through the six levels of activity we find in our external environment, which interact together to produce the outcomes we see as life forms.

In agriculture, you can say of a turnip that it has such and such a colour and consists of such and such constituents. But that is not to understand the turnip - not by a long way, nor, above all ,does it take into account the living relationship of the turnip to the soil, to the season at which it ripens, and many other important matters.

If you observe the needle of a compass you discover that one end always approximately points to the north, the other to the South. But you seek the cause for this not in the magnetic needle itself but in the earth as a whole, at one end of which is what is called the Magnetic North, at the other end is the Magnetic South Pole. To try and discover from the magnetic needle itself why it should so obstinately turn in one direction would be absurd. For its constant maintenance of direction can only be understood in relation to the whole earth. Yet what in the case of the magnetic needle is clearly absurd is regarded by many people as sense when it comes to other things. The turnip is regarded as growing only within the narrow confines of its immediate earthly surroundings, but this becomes impossible if one comes to the point that its growth may be dependent upon innumerable factors which are not present on earth at all, but in its cosmic surroundings.

And thus in practical life many things are explained and ordered to-day as though we had to do only with the narrow isolated phenomenon, and not with activities and influences coming from the whole Universe. This task before us demands that in studying the life of plants, animals and the earth itself we should extend our views to the whole cosmos. For this reason we shall never acquire any real understanding of plant-life unless we realise that everything on earth is only a reflection of what takes place in the cosmos.

By looking to the cosmos, we create a duality between the activities outside of ourselves ; from the immediate air through to the expanses of the universe; and those activities that take place within us. Once we see our



internalised life processes as a reflection of the big things taking place outside of us, we have a true basis upon which to develop true references. Our main considerations therefore are our external astronomical reality and a reflected internal reality.

Outside of us, (b) we can determine several real spheres of energetic activity. Leaving aside the vast expanses of space for the time being, we can identify our Galaxy as a 'localised', but highly organised source of a constant stream of energetic activity, coming from the Galaxy's billions of stars. Within this 'being', we find our Solar System, with its planets, organised around our local star, the Sun. One of the features of the solar system is that its plane of rotation is some 85% off being aligned to the Galactic plane. This 'dislocation of orientation', along with its own gyroscopic EM field, allows for the Solar System to go some way towards forming its own individualised activity, within the activity of the Galaxy. Now moving one step further, we have the Earth itself , spinning within the body of the Solar system, but again its plane of rotation is some 23 degrees off being perpendicular to the plane of the Sun's ecliptic. This again provides a distinct energetic Earth activity within the 'body' of the Galaxy. Part of the Earth's uniqueness is the development of our Atmosphere, with its relatively high quantity of 20% free oxygen. This free oxygen has arisen as an exudate of the life processes found on Earth. Plant life in the form of algae, began to release free oxygen into an otherwise nitrogen dominant environment some three billion years ago.

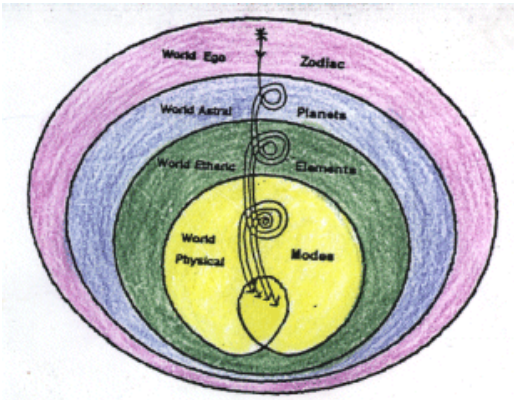
This then is the external energetic environment in which we find ourselves. For the purposes of our discussions these external sources of energetic activity have to be given names, and in ages past, these activities where given the following names. The truly formative activities constantly coming from the stars in the Galaxy are called Spirit, the more changeable activities of the Solar System and particularly the planets—as the Sun is a Star— are called Astral, while the life providing activities of the Atmosphere are called Etheric, and the processes of the Earth are naturally called Physical.

These four external 'Cosmic' spheres of activity, are the primary sources of the activities we can find reflected in the 'Internal' processes, of the living beings of the Earth.

In addition to these four layers of primary activity, we can also identify two more spheres, between the atmosphere and the Earth. The first are the physical bodies of the life forms themselves, and the second is the external environment of duality, from which life forms arise. At its very basis this level is the positive and negative electrical polarity that attracts particles to each other, through to the need for two adults of a species to create a new living being.

To truly address the questions in front of us, it is necessary to explore how the four primary external activities interact, with each other. To keep this comprehendible, we need more names beyond the four we already have, that can indicate this complexity of interactions. These names will arise throughout the lectures.

The four activities do not exist in isolation to each other. Life processes are an expression of these four 'bodies' constant interaction with each other. Spirit or Star EM Forces from the Galaxy, become active within the Solar system, before moving on to become active within the Atmosphere and then within the Earth itself. Once they reach the Earth, this compound of forces , I often refer to as the Cosmic Ether, becomes part of the Earths reflected energy, which streams back towards the Cosmos. It is in this reflected process that life forms arise.



To help with following this unique journey of language, I can provide two diagrams. (1,2, page 12) The first (2) identifies all of the energetic bodies interactions. While the second (1) places the terminology used in the Agriculture lectures, in their appropriate position in relationship to the energetic activity described in the top diagram.

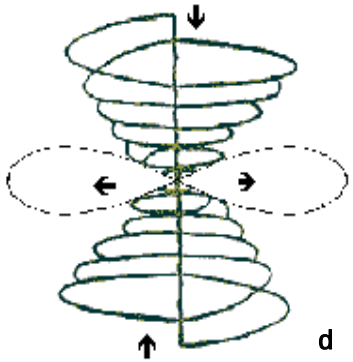
We have taken the first step by identifying the order we find in the external environment - diagram (b). This can be seen as the 'what is'.—These are the external energetic spheres, and for ease of later differentiation I like to call these 'Cosmic' spheres. This term is often used to include all things

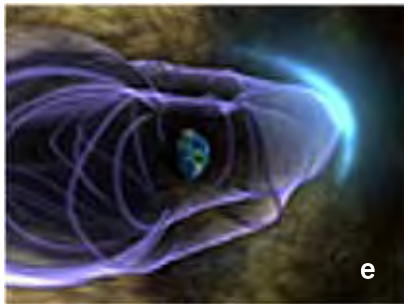
beyond our Galaxy as well .

We need to take another step in our considerations, to reach the glossary diagram. (1 on pg 12)

A significant phenomena that is easily overlooked when observing astronomy, is that everything is moving, and it has been moving for a very long period of time. This can be summed up as "Creation = Movement + Time". It is these two factors that stand at the very base of the 'created ' organisations we find about us.

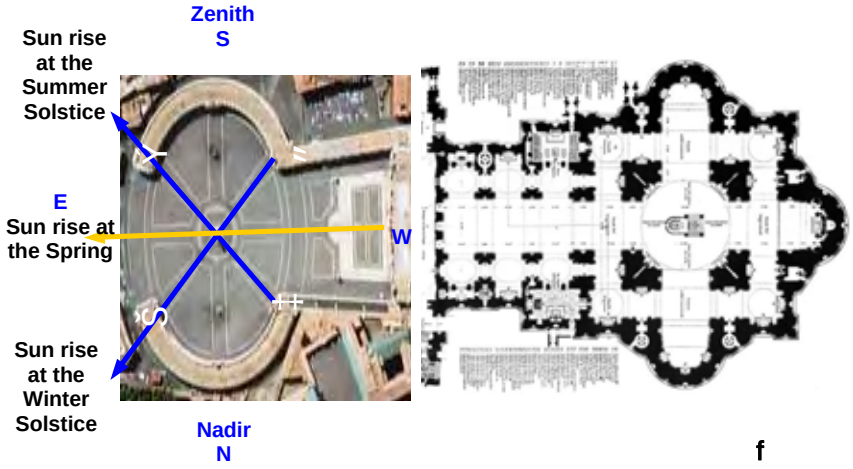
Tesla and Russell, consider the primal Ether to a electro static field, made up of random electrons. Due to the natural polarising nature of electrons, order begins to occur within this chaotic movement, and it is not long before these moving electrons begin to spin into greater complexity, and a strong gyroscopic electro-magnetic field develops. Cymantics shows this begins at the 963Hz frequency. This EM field then organises all 'substance' present in that field, in alignment with the magnetic field's positive and negative poles. These poles are characterised by the formation of vortexes, on the vertical axis, (d) with a torus magnetic field joining them. This can be observed in the magnetic field of Earth, with its North and South poles. (e) These poles, with their spinning vortices cause an inflow of force and matter, moving towards the center, and an outflow of force and matter moving from the center outwards to the periphery, along the horizontal plane (d).





The matter, moving vertically towards the center, is consolidated, or consumed in the center, (i.e. is it a planet or a Sun), before being spun off again along the horizontal axis of the gyroscope. This horizontal plane of activity, is organised by the magnetic field and sees the matter consolidated, becoming manifest as what is most often seen as the flat spiral disk substance we see as the Milky Way galaxy, or the planets of our Solar system.

This combination of the vertical and horizontal planes, provides us with the form of the 'Greek' cross, which in turn is the basis of its close relative, the octagon. This form is common in all the world religions, from the Chinese,



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Mayans, Tibetans, Persians and Christians. A wonderful example of how thoroughly this Cross has entered human culture is the number of sacred buildings based upon the Octagon and the more formal Greek Cross, seen in St Peter's Basilica in Rome. (f)

When looking at the internal anatomy of the gyroscope, not only do we have the vertical and horizontal planes, - which determines the North South East and West axis— but we must also surmise about the qualities of the spaces in between these four basic axis.

To many cultures, the marking of the Sun's solstice points, as seen from the Earth, provides the secondary diagonal cross. This can be seen in St Peter's square. Thus the vertical cross is a primary 'external' cross, arising from the universal order seen in the gyroscopic torus, while the diagonal Earthly based seasonal cross, becomes the cross of matter, related to the 'internalised' activity of lifeforms.

A further feature of the gyroscope is that it is built upon polaric tension of positive and negatively charged elements. This shows in ancient wisdom as the polarisation of the Spirit (Sky Father) and Physical (Earth Mother) activities – found in most creation myths — which work on the vertical axis, while the subsequent 'children' show as the Etheric and Astral activities working together on the horizontal plane. This basic organisation is found on both the external

c

cross and the internal cross. This is best expressed in diagram (c).

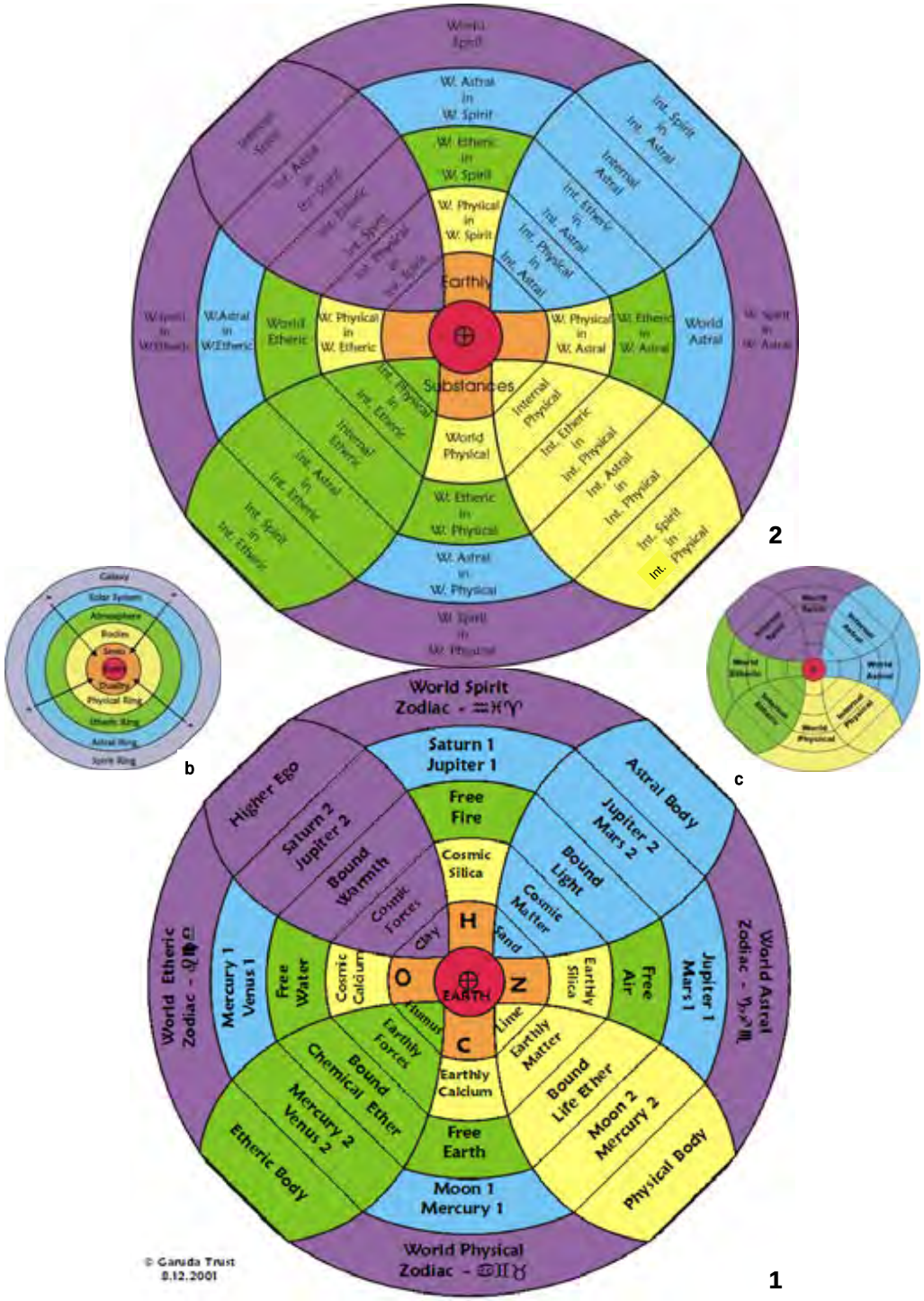
In diagram (b) we see how the 'Cosmic' energetic activities 'sit' in the Cosmos. Diagram (c) provides an image of these same activities once they move, polarise and become the organising basis of our living reality, within both the external and internal 'living' spheres. At this second stage of 'development' the external activities are called 'World' activities.

We can now take the next step in our journey. In life, we find not only that the energetic bodies work ONTO each other, pushing and pulling each other, but they also work INTO each other. This allows the directive influences of the Spirit, to not only order from outside, as in forming a boundary or skin on something, but we also find the spirit can internally direct some aspect of another 'body'. For example, how the blood circulation of the physical body, is directed by the spirits activity found in the substance and activity of Iron. Here the Spirit is working deeply within the physical body. We can find similar examples in all the other energetic body's interactions. So how can these interactions be expressed?

By placing diagram (c) on top of (b) *(see page 12)* *we are presented with a cross reference of how the various energetic activities interact with each other. To facilitate discussion of these various interactions within the following lectures, I have given all these interactions their own names.*

While this is a useful 'artistic' process, that provides an effective glossary of terms, for the complex subject in front of us, it also suggests an interpretation for THE universal octagonal form found in many religious symbols. Most cultures have lost its meaning and understanding. At best, the octagonal forms found in Christian and Islamic cultures are appreciated as an image of completion and universal harmony, however the significance of the individual places within the octagon has been lost long ago.

We need to look more deeply into the nature of the energetic bodies, and how they appear in living forms. Let us for a moment review the picture of a human being that Anthroposophy gives us. The human being stands before us in a physical body, which has a long evolution behind it, three preparatory stages before it became an earthly body — as is described in my book An Outline of Esoteric Science. This earthly body needs to be understood much more than it is by today's anatomy and physiology. For the human physical body as it is today is a true image of the etheric body, and of the astral body, and even to a certain degree of the Ego organization that humans first received on earth. All of this is stamped like the stamp of a seal upon the physical body — which makes the physical body extraordinarily complicated. Only its purely mineral and physical nature can be understood with the methods of knowledge that are brought to it today. What the etheric body


World Spirit
W. Astral in W. Spirit
W. Etheric in W. Spirit
W. Physical in W. Spirit
Earthly
W. Physical in W. Etheric
W. Physical in W. Astral
W. Etheric in W. Astral
World Etheric
World Astral
Substances
World Physical
W. Etheric in W. Physical
W. Astral in W. Physical
Internal Astral
Int. Spirit in Int. Astral
Int. Etheric in Int. Astral
Int. Physical in Int. Astral
Internal Physical
Int. Etheric in Int. Physical
Int. Astral in Int. Physical
Int. Spirit in Int. Physical
Internal Etheric
Int. Physical in Int. Etheric
Int. Astral in Int. Etheric
Int. Spirit in Int. Etheric
2
Galaxy
Solar System
Atmosphere
Bodies
Soma
Psyche
Spirit
Duality
Physical Ring
Etheric Ring
Astral Ring
Spirit Ring
b
c
World Spirit
Zodiac - ♒♓♈
Saturn 1
Jupiter 1
Higher Ego
Saturn 2
Jupiter 2
Bound Warmth
Free Fire
Cosmic Silica
Cosmic Forces
Astral Body
Jupiter 2
Mars 2
Bound Light
Cosmic Matter
H
O
N
C
EARTH
Clay
Sand
Cosmic Calcium
Earthly Silica
Limus
Line
World Etheric
Zodiac - ♌♍♎
Mercury 1
Venus 1
Free Water
Earthly Forces
Earthly Calcium
Earthly Matter
Free Air
Jupiter 1
Mars 1
World Astral
Zodiac - ♑♒♓
Bound Chemical Ether
Mercury 2
Venus 2
Etheric Body
Free Earth
Bound Life Ether
Moon 2
Mercury 2
Physical Body
Moon 1
Mercury 1
World Physical
Zodiac - ♊♉♋
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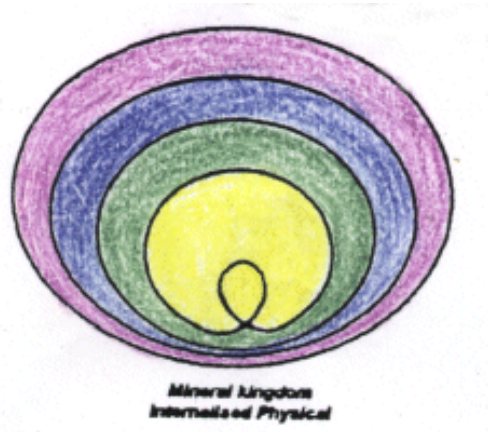
impresses upon it is not to be reached at all by those methods. It has to be observed with the eye of a sculptor so that one obtains pictorial images of cosmic forces, images that can then be recognized again in the form of the entire human being and in the forms of the single organs.

The Physical body is available for us to observe with our scientific mind. The Etheric body, being sourced from our life sustaining Atmosphere, is the energetic body that imbues life and the capacity to grow and develop into all living forms. The World Etheric activity is concentrated by the Earth, with the help of oxygen, water and the alkali elements; and in life forms is seen to move upwards from the Earth, with a seemingly unlimited capacity to create growth. It drives or energises the movement of fluids in general, which leads to the formation of mass and bulk in physical forms. It is especially active in the support the lymphatic and immune system of physical organisms. When the Etheric body leaves a living entity, death occurs. We experience a greater or lesser Etheric activity as a physical sensation of being energetically 'up' or 'down'. When your Etheric body is strong you are full of life. Often a white glow can be seen up to two inches from the physical body when an individuals Etheric body is strong. When it is weak you feel physically down and heavy. The individual with a weak Etheric body looks grey and feels drained.

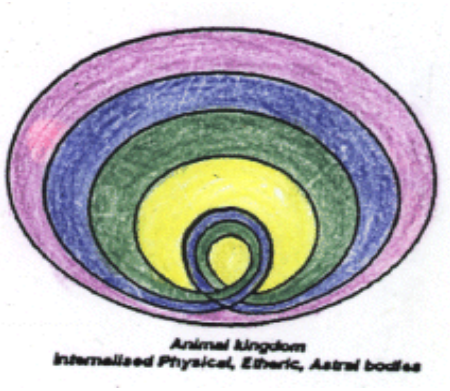
The Etherics raw activity can be seen in the first stages of growth where there are unshaped forms. For example in the first months of a baby's life or the early stages of plant development. The early leaves of many plants are full and round and repetitive in comparison to the more adult leaves that are often indented and pointed. It produces watery shapes and curved forms.

The mineral kingdom does not undergo changes through a death process, as the Etheric body (and the others) stays external. They remain as atmospheric forces of light heat and water, which work ONTO the mineral externally. The Etheric body is only embodied by plant, animal and human. Crystals may appear to be an exception, however they grow from additions to the outside of their form.



The Plant Kingdom has a physical form and internalises the Etheric body, so it can grow and expand as well as die. With plants the planetary Astral and star sourced Spirit/Ego activities remain external in the Cosmic and World spheres. So, while plants will expand and grow, it is still the external influences of light, moisture and heat that determine their final form. Flowering and seeding are processes bought about by the Astral and Spirit acting onto the plant externally. If they do not work strongly enough a plant will not flower. Plants do not have to 'reach puberty' and flower in the same way animals and humans must. We will see more examples of this later.

It is in the animal kingdom that the Astral Body imbues the physical and life form with sensation and movement. Commonly called the sense body, the Astral enables the living forms to experience their environment through taste, smell, touch and sound. From this sensation, the entity can then determine whether it feels good to be at that point or not. This is the 'animal' intelligence (instinct) carried by the Astral, which responds to stimuli - Does it feel good or not? The Astral body is also necessary for waking and sleeping to take place. Only animal and human kingdoms can really experience awakening and sleep. In this sense the plant kingdom is in a constant state of 'human' sleep. Plant processes just speed up and slow down according to the external stimuli of hot\cold, light\dark, wet\dry.



The Astral's hallmarks in the animal kingdom are the formation of true proteins, the degree of sensitivity and movement the animal possesses, the ability to internalise the breathing, along with the formation of true organs and the animals reactions to light. (3)

In the plant world, the Astral's influence shows in the degree of leaf segregation, the intensity of flowering and the development of poisonous nitrogen based alkaloids and proteins. The Solanance and Legume

families are two which draw the Astral activity closely into themselves. Hence their poisonous hallucinogenic effects. The states of consciousness some substances from these families produce in Humans, gives experiences of the Astral realm.

In Humans, the Astral influences the formation of protein and the organs, however it also makes its presence felt through our psychological sphere. Emotions, dreams, imaginations and 'psychological ' swings are all related to the Astral body's activity. A careful study of the relationship between planetary movements and one's psychological changes, is a worthwhile aid in the path towards the Spirits objectivity. As it is the Astral body and its wanderings that the Spirit needs to gain objectivity with.

The Astral body resides cosmically in the spheres of the visible planets. As such, a sevenfold character can be seen as its imprint. While the physical organs are related to various planets, the seven energy centres of the body referred to as the Charkas are energetic 'organs' of the Astral body.

The Ego, or internalised spirit, imbues the sensitive life form with objective intelligence and individuality. This is separate from the dream consciousness of the astral intelligence or instinct. Ego intelligence is related to processes of thought and deduction, as well as remembering and forgetting. Processes which enable its recipient to consciously determine action and response. Once the response has been determined, the Ego imparts the degree of commitment by which the action is carried out. Through this action body heat is created. An over active Spirit in turn shows as obsessional behaviour.

The Humans are the only kingdom presently with the potential to internalise this body. This bestows upon us the potential for self-consciousness and to make free choice with regards to the sensations and instincts the Astral body experiences. The degree this free choice is exercised is determined by how 'possessed' the Spirit is, by the Astral body.

In the other kingdoms of nature, the Spirit works from outside, as a collective function called the group soul. In animals, the group soul is evident in the flock of sheep or

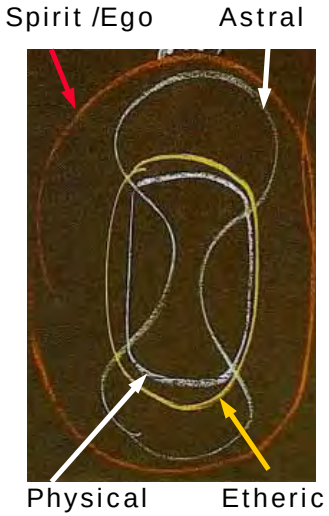
birds, the school of fish and the pack of dogs. In both animals and plants, the species type connects the individual plant to the collective Ego/Spirit. It is fair to imagine that every species is sourced from an individual Fixed Star, while variations within the species are due to subsequent planetary and atmospheric influences, collected along its journey to Earth.

With Humans, internalising the Spirit properly, allows our connection through race and blood ties to begin to diminish in importance. We become individuals of the one human species, able to form associations through ideology, faith and individual preference, irrespective of race and blood background.

While these are the four major activities that influence life's functions, in creation there is very little black and white and many shades of grey. In observing how various living entities work with these four bodies , there are often occasions when an entity is in a grey area. Certain animals may seem very plant like, or almost human, while even humans can sometimes take on a plant quality. Nevertheless, they will be an expression of these four activities interaction.

Health in all living beings arises when the relationships of the bodies are in their right order. When a disturbance arises, we see illness.

In man and animals, the astral body is connected with the physical body through the etheric body and a certain connection is the normal state. Sometimes, however, the connection between the astral body and the physical body (or one of the physical organs) is closer than would normally be the case; so if the etheric body does not form a proper "cushion" between them, the astral intrudes itself too strongly into the physical body. It is from this that most diseases arise.



We can say that the human being stands before us in physical, etheric and astral bodies, and an ego organization. In waking life these four members of the human organization are in close connection. In sleep the physical body and etheric body are together on one side, and the ego organization and astral body on the other side. With knowledge of this fact we are then able to say that the greatest variety of irregularities can appear in the connection of ego organization and astral body with etheric body and physical body. For instance, we can have:

physical body, etheric body, astral body, ego organization. (Plate I, 1) Then, in the waking state, the so-called normal relation prevails among these four members of the human organization.

But it can also happen that the physical body and etheric body are in some kind of normal connection and that the astral body sits within them comparatively normally, but that the ego organization is somehow not properly sitting within the astral body. Then we have an irregularity that in the first place confronts us in the waking condition. Such people are unable to come with their ego organization properly into their astral body; *thus the Ego's organising influence is very weak and the 'astral escapes its keeper'*, therefore their feeling life is very much disturbed. They can even form quite lively thoughts. For thoughts depend, in the main, upon a normal connection of the astral body with the other bodies. But whether the sense impressions will be grasped appropriately by the thoughts depends upon whether the ego organization is united with the other parts in a normal fashion. If not, the sense impressions become dim. And in the same measure that the sense impressions fade, the thoughts become livelier. Sense impressions can appear almost ghostly, not clear as we normally have them. The soul-life of such people is flowing away; their sense impressions have something misty about them, they seem to be continually vanishing. At the same time their thoughts have a lively quality and tend to become more intense, more colored, almost as if they were sense impressions themselves.

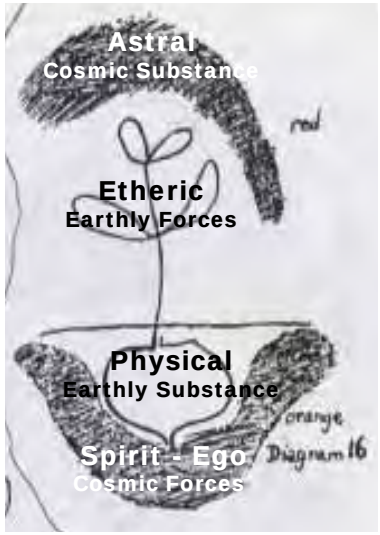
When such people sleep, their ego organization is not properly within the astral body, so that now they have extraordinarily strong experiences, in fine detail, of the external world around them. They have experiences, with their ego and astral body both outside their physical and etheric bodies, of that part of the world in which they live — for instance, the finer details of the plants or an orchard around their house. Not what they see during the day, but the delicate flavor of the apples, and so forth. That is really what they experience. And in addition, pale thoughts that are after-effects in the astral body from their waking life. (1)

With the plant and animal the relationship of the bodies is somewhat different.

What is the human brain for? It *acts* as a support for the Ego. The animal, let it be remembered, has as yet no Ego; its brain is only on the way to Ego-formation. In man it goes on and on to the complete forming of the Ego. How then did the animal's brain come into existence? Let us look at the whole organic process. All that which eventually manifests in the brain as Earthly Matter *from the Physical body*, has simply been "excreted ,

(deposited), from the organic process. Earthly Matter has been excreted in order to serve as a base for the Ego. Now the process of the working-up of the food in the digestive tract and metabolic and limb system produces a certain quantity of Earthly Matter, which is able to enter into the head and to be finally deposited as Earthly Matter in the brain. But a portion of the food stuff is eliminated in the intestine before it reaches the brain. This part cannot be further transformed and is deposited in the intestine for ultimate excretion.

We come here upon a parallel which will strike you as being very paradoxical but which must not be over-looked if we wish to understand the animal and human organisations**.** What is brain matter? It is simply the contents of the intestines brought to the last stage or completion. Incomplete (premature) brain-excretion passes out through the intestines. The contents of the intestines, are in their processes, closely akin to the contents of the brain. One could put it somewhat grotesquely by saying that that which spreads itself out in the brain is a highly advanced dung-heap. And yet the statement is essentially correct. By a peculiar organic process, dung is transformed into the noble matter of the brain, there to become the foundation for the development of the Ego, *by providing a physical structure to receive the Cosmic Forces, the Ego uses.* In man the greatest possible quantity of intestinal dung is transformed into cerebral excrement because man bears his Ego on the earth. In animals the quantity is less. Hence there remain more forces in the intestinal excrement, of an animal which we can use for manuring. In animal manure, there is therefore more of the potential Ego element, since the animal itself does not reach Ego - hood. For this reason animal dung and human dung are completely different. Animal dung still contains Ego-potentiality. In manuring a plant, we bring this Ego-potentiality into contact with the plant's root. Let us draw the plant in its entirety (Diagram 16). Down here you have the root; up there the unfolding leaves and blossoms. And as above, in the leaves and blossoms, the astral element (red) is acquired from contact with the air, so the Ego-potentiality (orange) develops below in the root through contact with the manure. *This Ego potentiality is also recharged during the winter stage of the Silica cycle, we will look into in a later session.*



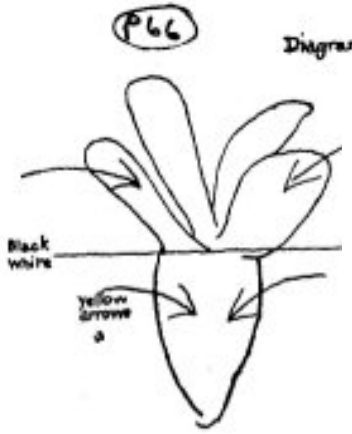
The farm is truly an organism. The astral element is developed above, and the presence of orchard and forest assists in collecting it. If animals feed in the right way on the things that grow above the earth, then they will develop the right Ego-potentiality in the manure. If they produce, this Ego-potentiality, it will work on the plant from the root, will cause it to grow upwards from the root in the right way according to the forces of gravity. It is a wonderful interplay, but in order to understand it one must proceed step by step.

Let us recall what I said about the plant as having a physical and etheric body and being more or less surrounded from above by the astral element. The plant does not reach the astral element but is surrounded by it. If the plant enters into a special relation with the astral element, as in the case of the formation of edible fruits, a kind of food is produced which will strengthen the astral element in the animal and human organism.

QUESTION: Has liquid manure the same force of ego-organisation as dung?
ANSWER: Of course, liquid manure and dung should be used in union with each other and both should contribute to the same force of organisation of the soil. The connection with the Ego to which I referred holds good particularly for the dung, but does not hold good in general for the liquid manure. For every Ego, even in the rudimentary form in which it appears in manure, must work in conjunction with some astral element, and the dung would have no astrality unless the liquid manure were there. The liquid is strong is astrality, the dung in ego-force. The manure may be regarded as “grey matter," while the liquid is the cerebral fluid.

Pest Control

Now I am going to tread on very thin ice and take an example very near home. I am going to talk about the nematode of the beetroot. The outer signs of this disease are a swelling of root fibers and limpness of the leaves in the morning. Now we must clearly realise the following facts: The leaves, the middle part of the plant which undergo these changes, absorb *astral* influences that come from the surrounding air, whereas the roots absorb the Ego



forces which have entered into the earth and are reflected upwards into the plant. What, then, takes place when the nematode occurs? It is this: The process of *astral* absorption which should actually reside in the region of the leaves has been pressed downwards and embraces the roots.

Thus if this (Diagram No. 10) represents the earth level, and this the plant, then in the plant infested with the nematode ,the *astral* forces which should be active above the horizontal line are actually at work below it. What happens is that certain *astral* forces slide down to a deeper level; hence the change in the external appearance of the plant. But this also makes it possible for the parasite to obtain under the soil (which is its proper habitat) those *astral* forces which it must have to sustain it (the nematode is a wire-like worm). Otherwise it would be forced to seek for these forces in the region of the leaves; this, however, it cannot do as the soil is its proper environment. Some, indeed all, living beings can only live within certain limits of existence. Just try to live in an atmosphere 70 degrees above or 70 degrees below zero and you will see what will happen. You are constituted to live in a certain temperature, neither above nor below it. The nematode is in the same position. It cannot live without earth and without the presence of certain *astral* forces brought down into it. Without these two conditions it would die out.

Our task, is to help the energetic activities back to their rightful place, and the pest will have no choice but to move away.

Every living being is subject to quite definite conditions. And for the particular beings with which we are dealing, it is important that *astral* forces should enter the earth, forces which would ordinarily display themselves only in the atmosphere around the earth. Actually the workings of these forces have a four-year rhythm. Now in the case of the nematode, we have something very abnormal. If one enquires into these forces, one finds that they are the same as those at work on the cockchafer grubs; and as those, too, which bestow on the earth the faculty of bringing the seed potato to development. Cockchafer grubs as well as seed potatoes are bred by the same forces, and these forces recur every four years. This four yearly cycle is what must be taken into account not with regard to the nematode but with regard to the steps we take to combat it."

A particularly ticklish question was raised in the discussion we had the other day as to whether parasites could be combated in this way. i.e. by methods of mental concentration and the like. There is no doubt that if one sets about it in the right way one can do such things. The period lying between the middle of January and the middle of February is that in which the forces which have been concentrated inside the earth are most powerfully unfolded.

If we were to set this period aside as it were as a festival season and undertook these acts of concentration, then we should be able to bring about such effects. When we meditate we enter into a new relationship with the nitrogen, the substance which contains the "Imaginations", *due to it being the physical carrier of the astrality*. We enter upon a state in which such things can become operative; upon a state in which we confront quite differently the whole world of plant-growth. Such effects are not so obvious today as they were in the past when these things were recognised. For there were times when people knew that by a certain inner attitude they actually fitted them-selves for the care of the growth of plants. Nowadays these delicate and subtle influences are overlooked, the presence of other people disturbs them, as is bound to happen when one is constantly moving about among people who disregard such things, this is why it is so easy to refute their existence. I therefore hesitate to talk freely of such things before a large audience, because they can so easily be refuted on the basis of the present conditions of daily life. As I said, it is a ticklish question, but a question which does admit of a positive answer. But this activity must be undertaken in harmony with the whole of Nature. One must realise that it makes all the difference whether an exercise of concentration is carried out in mid-winter or in mid-summer.

Plants

I shall ask you to-day to join me in the consideration of rather more recondite matters, to follow me into what is nowadays an almost unknown territory, although the instinctive husbandry of the past was thoroughly conversant with it. The beings in Nature - minerals, plants, animals - we will disregard man for the moment - are often regarded as though they existed in completely separate realms. It is the custom to-day to look at a plant as though it existed by and for itself, and similarly one species of plant is also regarded as being isolated from other plant species. So these things are neatly sorted and fitted into general species, as though they were being put into boxes. But things are not like this in Nature. In Nature - nay, in the world-being as a whole, all things are in mutual interaction. One thing is always being affected by another. In these materialistic days, only the more palpable effects of this interaction are noted, such as when one thing is eaten or digested by another, or when the dung of animals is used for the soil. In addition to these, however, finer interactions amongst more delicate forces and substances are continually taking place: through warmth, through the chemical-etheric element which is continually at work in the atmosphere, and through the life-ether. Unless we take account of these more delicate interactions, we shall make no progress, at any rate in certain departments of Agriculture. In particular we must look to those more

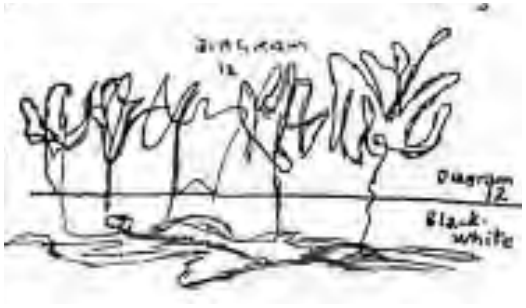
intimate interactions which take place in Nature when we have to deal with the life together of plant and animal on the farm. We must look with understanding not only upon those animals which undoubtedly stand close to us, such as cattle, horses, sheep, etc., but also, for example, upon the manifold insect world which during a certain period of the year hovers around the plants. Indeed we must learn to look with understanding at bird life too. Humanity to-day is very far from realising how much farming and forestry are affected by the expulsion from certain districts, of certain kinds of birds as a result of modern conditions. Here again light can be thrown on the subject by conclusions given by Spiritual Science. Let us therefore extend some of these ideas which have been working upon us and come by their help to a yet wider vision.

A fruit tree - apple, pear or plum - is something completely different in kind from a herbaceous or cereal plant as any kind of tree outwardly is indeed. But, putting aside any preconceived notions, we must find out wherein the peculiarity of the tree lies. Otherwise we shall never understand the function fulfilled by fruits in the economy of Nature. I am speaking, of course, of the fruit that grows on trees. If we look at a tree with understanding we shall find that the only parts of it which can really be reckoned as plant are the tender twigs, the green leaves and their stalks, the blossoms, the fruits. These grow out of the tree just as herbaceous plants grow out of the soil, the tree being in fact "earth" in relation to the parts that grow out of it. It is as though the soil were heaped up - but a somewhat more quickened soil than the ordinary soil in which our herbaceous and cereal plants grow.

If, therefore, we want to understand the nature of a tree, we must observe that it consists of the thick trunk, to which are attached the branches and boughs. On this ground the specifically plant-like parts grow, viz. leaves and blossoms, which are as much rooted in the trunk and branches as cereal and herbaceous plants are rooted in the earth. The question therefore arises: Is this plant– or plant like part - which may be regarded as more or less parasitical, really rooted in the tree?

We cannot discover an actual root on the trees. We conclude, therefore, that this plant, which develops its leaves and blossoms and twigs up aloft, must have lost its roots in growing on the tree. But no plant is complete without its root. It must have a root. Where, then does the actual root of this plant reside?

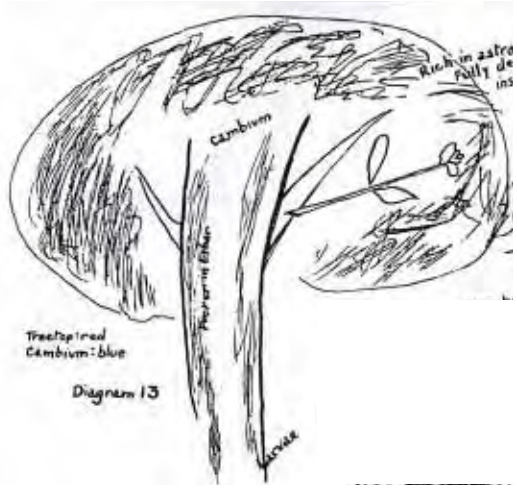
Now, the root is only invisible for our limited outer vision. In this case one does not see it, but has to understand where it is. What do we mean by this? The following concrete comparison may help. Imagine a large number of herbaceous plants so closely together that their roots were intertwined and



grew into each other, forming a completely matted mass or pap of roots. You can well imagine that this pap does not remain chaotic, but that it organises itself into a unity so that the sap-bearing vessels unite with each other. In this organised root-pap, it would not be possible to distinguish where one root finished and the other began, and a common root-organ would arise (See Diag. No. 12). A thing like that does not, of course, exist in the soil, but such a root-formation is actually present in the tree. The plants that grow on the tree have lost their root, have become relatively separated from it and are only, as it were, etherically connected with it. What I have drawn hypothetically is really the layer of cambium (a layer of living cells lying between the last-formed wood and the outer bark) in the tree and we cannot regard the roots of these plants otherwise than as having been replaced by the cambium. From this tissue, which is always forming new cells, these plants unfold themselves just as from the root below a herbaceous plant unfolds above the soil. We can now begin to understand what the tree really is. The tree with its cambium - which is the only soil-producing layer in the tree, is actually heaped-up earth, which has grown upwards into the air element and therefore requires a more interiorised form of life than is present in the ordinary soil which contains the root. Thus we must regard the tree as a very curious entity, whose function it is to separate the "plants" growing on it (twigs, blossoms, fruit; from their roots; an entity which places between them and their roots a distance which is bridged only by spirit - or more strictly by the Etheric. It is in this way we need to look, with a macro-cosmic understanding, into the facts of growth.

But the matter goes much farther. What results arise from the existence of a tree? That which is around the tree in the air and outer warmth is of a different plant-nature from that which grows up from the soil in the air and warmth and forms the herbaceous plant. It is a plant-world of a different order, possessing a far more intimate relation with the surrounding astral element. Lower down that element is eliminated from the air and warmth in order to make them mineral-like, so that they can be used by man and beast (see lecture II. They become “dead” air and warmth).

It is true, as I have said, that the plant we see growing upon the ground is surrounded, as with a cloud, by the astral element. But around the tree, the astral element is far denser. So much so, that we may say: Our trees are definitely collectors of astral substance.



Here one might say it is quite easy to reach a higher development and, become "esoteric" - I do not mean clairvoyant but clairsentient as to the sense of smell. One has only to acquire the capacity for distinguishing between the scent of plants growing in the ground, the peculiar smell of orchards, especially in the spring when they are in flower, and the aroma of forests. *Then one is able to tell the difference between* a plant atmosphere poor in astral elements, such as that of herbaceous plants growing in the soil and an atmosphere such as we sniff with such pleasure when the scent of trees is wafted in our direction. And if you train your sense of smell to distinguish between the scent of soil-grown (herbaceous) plants and the scent of trees, you will have developed “clear-smelling” for the thinner and for the denser forms of the astral element. The countryman, as you see, can very easily acquire this "clear-smelling" though this faculty, common in the old days of instinctive clairvoyance, has been much neglected in recent times.

If, now, we realise the consequences to which this may lead the question will arise: what is happening in that part of the tree which may be regarded as the opposite pole from the "parasitical" plants on the tree which collect this astral element? What is happening through the cambium?

Now, the tree makes the atmosphere far and wide around it richer in astral element. What happens while the "parasite" growth goes on above in the tree? The tree here has a certain inner vitality, a powerful etheric life in it. The cambium tones down this vitality, making it more mineral in nature. While about the upper part of the tree an enrichment of the astral substance is going on, the cambium causes an impoverishment of the etheric life in the tree. The tree within is deprived of etheric life as compared with the herbaceous plant. In consequence, this produces a change in the root. The root of the tree becomes more mineral, far more mineral than the roots of the herbaceous plants. But by becoming more mineral, the tree root withdraws some of the etheric life from the soil; it makes the soil around the tree slightly more dead than it would be around a herbaceous plant. This must be fully borne in mind, for these natural processes always have a great significance in the economy of Nature. We must therefore seek to understand the significance of the astral wealth in the atmosphere around the tree and of

the etheric poverty in the region of the roots.

If we look around us, we can find the further connection. It is the fully developed insect which lives on and weaves in this enriched astral element which wafts through the trees; whereas the impoverished etheric element beneath, spreading in the soil and throughout the whole creation, is that which harbours the larvae or grub. Thus if there were no trees on the earth there would be no insects. The insects that flutter around the upper parts of the trees and through the forests depend for their life upon the presence of the trees; and exactly the same thing is true of the grubs.

Here we have yet another indication of the inner connection between all roots and animal life beneath the soil. This is especially evident in the case of the trees. But this same principle which is so striking in the case of the trees is present in a modified form throughout the whole of the vegetable world, for in every plant there lives something that tends to become a tree. In every plant the root and what is around it tends to throw off the etheric life whereas the upper growth strives to attract the astral element more closely to itself. For this reason there arises in every plant that kinship with the insect world which I have specially characterised in the case of the tree.

Worms

This relation, however, to the insect world in fact extends so as to comprise the whole of the animal world. In former times insect grubs, which can only live upon the earth because of the presence of tree roots, transformed themselves into other kinds of animals, similar to larvae and remaining at the larva stage throughout their lives. These animals then emancipated themselves to a certain extent from the tree root nature and adopted a life which extends also to the root region of herbaceous plants. And now we find the curious fact that certain of these sub-terrestrial animals, though far removed from being larvae yet have the ability to regulate the amount of etheric life in the soil if this amount becomes excessive. When the soil becomes, as it were, too much alive and the sprouting etheric life too strong, these animals of the soil see to it that this excess is reduced. They are thus wonderful vents which regulate the vitality in the soil.

These lovely creatures, for they are of the greatest value to the earth, are no other than the common earth-worms. One ought to study the life of earthworms in relation to the soil, for these wonderful animals allow just that amount of etheric life to remain in the soil as is needed for the growth of plants. Thus in the soil we have these creatures, earth-worms and their like, distantly resembling larvae. One ought in fact to see to it that certain soils which require it are supplied with a healthful stock of worms. We should soon see how beneficent such a control over this animal-world in the

soil can be, not only for vegetation but also thereby for the rest of the animal kingdom, as we shall show later.

Birds

Now there are certain animals which bear a distant resemblance to the insect world, to that part of it which is fully developed and winged, I mean the birds. It is well known that in the course of the development of the earth something very wonderful took place between the birds and the insects. It is as though, to put it figuratively, the insects had one day said: "We do not feel strong enough to "work-up" the astrality sparkling around the trees, we shall therefore use the "desire to be a tree" of other plants. We shall flutter around these, and leave largely to you birds the astral life that surrounds the trees." Thus there arose in Nature a proper "division of labour" between the birds and the butterflies; and this co-operation in the winged world brought about in a wonderful manner the right distribution of astral life wherever it was required on the surface of the earth. If these winged creatures are removed, the astral life will fail to accomplish its proper function, and this will be noticeable in the stunted condition of the vegetation. The two things are connected; the world of winged animals and all that grows out of the soil into the air. The one is unthinkable without the other. In farming, therefore, we must see to it that birds and insects fly about as they were meant to do and the farmer should know something about the breeding and rearing of birds and insects. For in Nature - I must repeat this again and again - everything, everything is connected.

These considerations are of the utmost importance for a right understanding of the questions before us and we must therefore hold them very clearly in our minds. The winged world of insects brings about the proper distribution of astrality in the air. The astrality in the air has a mutual relationship with the forest which directs it in the proper way, much as in the human body the blood is directed by certain forces. And this activity of the forest, which is effective over a very wide area, will have to be undertaken by something quite different in a district where there is no forest. Indeed, in districts where woods alternate with arable land and meadows that which grows in the soil comes under quite different laws from those which rule in completely unwooded districts.

There are certain parts of the earth which were obviously wooded areas long before man took a hand. In certain matters, nature is cleverer than we are, and it may safely be assumed that if a forest grows naturally in a certain district it will have its uses for the neighbouring fields and for the herbaceous and cereal vegetation round about. In such districts one ought therefore to have the intelligence not to uproot the woods but to cultivate them. And as

the earth is gradually changing through climatic and cosmic influences of all kinds, one should have the courage, when the vegetation becomes poor, not merely to indulge in all sorts of experiments in the fields and for the fields, but to increase the area of woods in the neighbourhood. And when plants run to leaf, lacking the power to produce seed, one should take bites out of the neighbouring woods. The regulation of woods in districts which Nature intended to be wooded is an integral part of agriculture, and must be examined with all its consequences from a spiritual point of view.

Again, the world of grubs and worms may be said to stand in a mutual relationship to the lime, i.e. to the mineral part of the earth; while the world of birds and insects, of all that flies and flutters about, has a similar relationship to the astral element. The relationship between the worm and grub world and lime brings about the drawing off of the etheric element. This is the function of lime, but it performs this function in co-operation with the world of worms and grubs.

If things are to be rightly handled, it is necessary to gain insight into the mode of activity of substances *(physical)* , and forces *(etheric),* the dynamic *(astral)* and of the spiritual too in every part of agriculture. A child who does not know what a comb is for, will bite into it or otherwise misuse it. In the same way we shall make quite a wrong use of things if we do not understand their essential being and their specific functions.

Compost and Manure

To make the matter clearer let us take the case of a tree *again*. A tree is different from an ordinary annual plant which remains at the merely herbaceous stage. It surrounds itself with rind and bark, etc What then is the fundamental nature of the tree as opposed to that of an annual plant? In order to answer this question, let us compare the tree to a mound of soil which has been piled up and is exceptionally rich in humus, i.e. which contains an exceptionally large quantity of more or less decomposed vegetable matter, and includes perhaps some decomposing animal matter as well. Let us assume that this is the mound of soil, rich in humus, and I will make in it a crater-like depression; and let us take this (Indicated in the second part of the drawing) as the tree, the more or less solid part being outside, while inside grows that which goes to build up the tree as a whole. It may strike you as

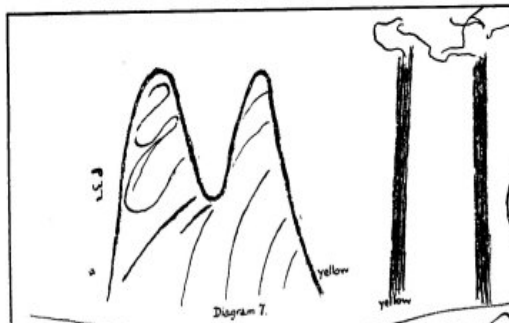


Diagram 7.

strange that I should place these two things side by side, but they are more closely related than you may perhaps think. The reason is that soil such as I have described, soil containing plenty of humus, i.e. substances in course of decomposition, bears etheric life within it. And this is the point. When soil is so constituted as to have etheric life within it, it is on its way to becoming the outside covering of the plant, but does not in fact develop so far as to become bark. Now imagine (although, of course, this does not happen in Nature) that such a mound of soil, with its humus content has, by means of its etheric life, raised itself to a higher form of development and wrapped itself round the plant. For if any part of the earth is raised above the general level, if the outer separates itself from the inner, then that which is raised above the normal level will show a definite tendency to life, a distinct tendency to be penetrated with etheric life. This is why, if you want to make inorganic soil more fertile by mixing it with humus-like substance or with any sort of decomposing refuse, you will find it easier to do so successfully if the soil is heaped up into mounds. For then the soil itself will have the tendency to become inwardly alive and plant-like. The same process takes place in the formation of a tree. The soil bulges upwards, as it were, and surrounds the plant with its own etheric life. Why do I say this? The reason is that I wish to waken your consciousness to the fact that there is an intimate kinship between what is enclosed within the contours of the plant and that which comprises the soil round the plant. It is untrue that the life of the plant stops short at its outer sphere. The actual life is continued, particularly from the roots, into the soil and in many cases there is no sharp boundary between the life within the plant and that in its immediate environment.

In order to have a fundamental understanding of a soil which is manured or similarly treated, one must know that manuring consists in a vivifying of the soil so that the plant may not be planted in dead soil. A plant will more easily develop from its own vitality, for what is necessary for fruit formation, if it is planted in something already alive. Fundamentally all plant growth is slightly parasitic in character; it grows like a parasite on the living earth. And it must be so. In many parts of the earth we cannot rely on Nature herself to supply a sufficient quantity of waste organic matter to enable the soil adequately to revivify itself by decomposition of such matter. In those places, therefore, we must assist the growth of plants with manure. This necessity, however, arises least of all in districts containing so-called "black soil", for here Nature herself has seen to it that the soil is sufficiently alive.

You will see from all this what is really happening; but there is something further which must be understood. One must learn - and this may not always be pleasant – to enter into a personal relationship with everything that comes within the sphere of Agriculture, and particularly with the work

connected with manure and manuring. The job may seem to be an unpleasant one, but you cannot do without this personal relationship. Why? Well, if you consider the nature of any living being, you will find the reason. Every living being always has an inner and an outer side. The inner side is inside some kind of skin, the outer side is outside that skin. Let us begin with the inner side.

The inner side of every living thing has not only streams of force which go outwards in the direction shown by these lines but it also has streams of force which go inwards from the skin, which are pressed back. Now an organism is surrounded on the outside by streams of all kinds of forces. There is something which expresses very exactly although in a "personal" way the relationship which must be established by the organism between its inner and outer side. All the forces working inside the skin, all that stimulates and maintains life, must - pardon the phrase - inwardly smell, must have an inward stench. Taken as a whole, life itself consists in this that what is generally diffused as a scent is instead held together so that the scent is kept inside and does not stream outwards too strongly. An organism must therefore allow as little as possible of its scent-producing life to escape outwards through its skin. Indeed one might say that the healthier an organism, the more it will smell inwardly and the less it will smell outwardly. A living organism and particularly the plant organism (apart from the flower) is designed not to give out scent but to take it in. And if we consider the beneficial influences on a meadow full of fragrant aromatic flowers, we shall begin to notice how living things mutually support one another in Nature. This fragrance of flowers which is diffused and which is something different from the odour of mere life, issues from sources of which we shall become aware later and it acts on the plants from outside. One must enter into a personal, living relation to all these things; only then are we really one with Nature.

Now the main thing to understand is that manuring and the like must consist not only in conveying a certain degree of aliveness to the soil, but also in enabling the nitrogen to spread through it, in such a way that with its help the life is carried along certain lines of force as I showed yesterday. In manuring therefore we must bring sufficient nitrogen into the soil to enable the life to be borne into the organic structure of the soil which is to bear the plant. This is the task, but it must be carried out exactly and properly.

Now here is a very significant hint: when purely mineral matter is used for manure, it never reaches the earth element, but at best only the water

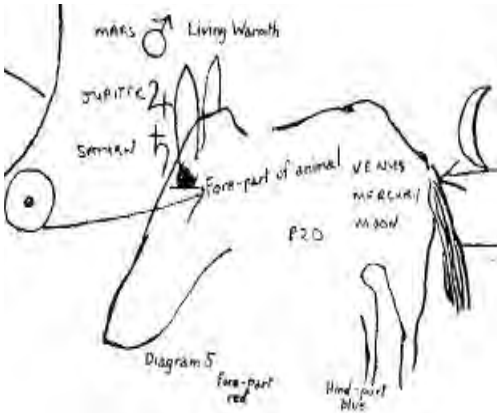
element in the soil. You can produce with mineral manures an effect in the watery part of the earth, but you will not achieve a vivification of the earth element itself. Plants therefore, which are under the influence of any sort of mineral manure will exhibit a type of growth which betrays that it comes from water which has been activated, not from the solid element which has been vivified. The best way to approach these things will be to take the most unassuming and often despised kind of manure, viz. compost. Here we have a means of vivifying the soil. We include in compost all kinds of neglected refuse from farm or garden, mown grass, fallen leaves, and the like, nay, even to the remains of dead beasts, etc. These things should by no means be despised, for they retain something not only of the etheric but even of the astral elements. And that is important. In a compost heap, all contained in it is actually pervaded not only by living and etheric but also by astral elements. These are present to a lesser degree in solid or liquid animal manure, but they are more stable, more settled - especially the astral element only we must make use of this stable or settled character in the right way. The action of the astral element upon nitrogen is hindered wherever the etheric element is too ebullient.

A too powerful sprouting of the etheric life hampers the astral element in the compost heap from doing its work. Now there is in Nature a substance which I have already mentioned from varied angles which is extremely useful in this respect, and that is the chalky or limestone element. If therefore, some of this - preferably in the form of quicklime - is introduced into the compost heap, we get the following special result: without causing the astral element to "volatilise" as it were too much, the etheric element is taken up by the quick-lime and the oxygen is absorbed as well; In this way, the astral element is brought to a wonderful activity. This leads to a very definite result: In manuring the soil with compost, we are giving over to it something which has the tendency to carry the astral element directly into the solid element without the detour through the etheric element. In this way, therefore, the earthly element is thoroughly "astralised" and thereby becomes penetrated with nitrogen. This result, indeed, very much resembles a certain process in the human organism - a plant-like process - so plant like in fact that it does not proceed to fruit formation, but stops at the stage of leaf and stem formation. What we give over to the soil in the compost has its parallel in that process which brings about in the food we eat that "mobility" of which I spoke before (see pg 35). We bring about a similar activity in the soil when we treat it in the manner described. Soil prepared in this way will be especially suitable for producing plants which, when they are eaten by animals, will continue to bring about a similar activity in their organisms. In other words, we shall do well to manure our

meadows and pasture lands with this compost, and if we carry through the process carefully, with strict regard for the other proceedings and ingredients, we shall succeed in obtaining good fodder, which, when mown and dried, preserves its quality. I should like to remind you that to take the right steps, one must look into the nature of the whole process, and finding the right thing to do in any particular case will, of course, depend to a great extent upon having the right feeling. This feeling, however, develops, when we look into the whole nature of this compost process. For instance, if the compost heap is left alone the astral element in it will begin to spread in all directions. It will then be a question of developing the right personal relation to the heap in order to find out how it can be made to retain its smell within it. This can easily be done by putting down a thin layer of the compost material and covering it with peat moss, then adding another layer and so on.

In this way we hold together that which would otherwise “volatilise” itself as smell. Nitrogen, indeed, is a substance which in all its modifications is eager to spread out into all directions. And now it is held back, by this I wish to indicate how necessary it is to treat the whole "agricultural-individuality" in the light of the conviction that etheric life and even the astral principle must everywhere be poured out over it to make our work effective.

The animal organism is *also* 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.

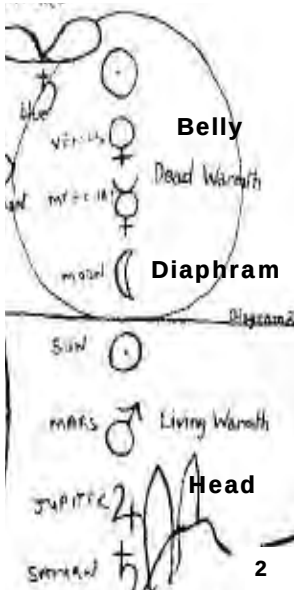


Those who are interested in these things should try to examine the forms of animals from this point of view. For a development of knowledge along these lines would be of enormous importance. Go to a museum, for example, and examine the skeleton of any mammal. In doing so, bear in mind the principle that 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.

In a similar manner we can look at plants and the soil. If then, certain forces coming from the Moon, Venus and Mercury enter the Earth and become effective in plant life, the question arises: What will promote and what will restrain the activity of these forces?

This soil - I will indicate it schematically by this straight line (see diagram 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



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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 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.

Cowhorns

Now following the trend, *we saw in compost,* we can take a further step. Have you ever wondered why it is that cows have horns, while certain other animals have antlers? It is a very important question. Yet what science has to say about it is quite one-sided and based on externals. Let us consider why cows have horns. I said that the forces within a living organism need not always be directed outwards, but can also be directed inwards. Now imagine an organic entity possessing these two sets of forces, but which is unformed and lumpish in build. The result would be an irregular, ungainly being. We should have curious looking cows if this were the case. They would all be lumpish and unformed, with rudimentary limbs as at an early embryonic stage. But this is not how a cow is constructed. A cow has horns and hoofs. Now what happens at the points where horns and hoofs grow? At these points an area is formed from which the organic formative forces, *moving outwards from the metabolism,* are reflected inwards in a particularly powerful way. There is no communication with the outside as in the case of the skin or hair; the horny substance *of the horn* blocks the way for these forces to the outside. This is why the growth of horns and claws has such a bearing upon the whole form of the animal.

Things are quite different in the case of antlers. Here the streams of forces, *coming from the metabolism* are not led back into the organism, but certain of them are guided for a short distance out of the organism; there must be

valves, as it were, through which the streams localised in the antlers (we can speak of streams of 'force', just as we can speak of streams of air or liquid) can be discharged. A stag is beautiful because it stands in intense communication with its environment by reason of its sending outwards streams of *metabolic* forces; by this it lives within its environment and takes up from it everything which works organically in its nerves and senses. Hence the nervous nature of the stag. In a certain respect all animals which have antlers are suffused with a gentle nervousness. This is clearly to be seen in their eyes.

The cow has horns, in order to reflect inwards the astral and etheric formative forces, *coming first from the metabolism*, which then penetrate right *back* into the metabolic system, so that increased activity in the digestive organism arises by reason of this radiation from horns and hoofs. If one wants to understand foot-and-Mouth disease, i.e. the retroaction from the periphery to the digestive tract, one must know of this connection. Our remedy for Foot-and-Mouth disease is based on the recognition of this. In the horn, therefore, we have something which by its inherent nature is fitted to reflect the living etheric and astral streams into the inner life organs. The horn is something which radiates etheric life and even the astral element. Indeed, if you were able to enter into the cows belly, you would smell the current of etheric-astral life which streams *back* from the horns: and the same thing is true of the hoofs.

Now this gives us a hint as to the measures we may recommend for increasing the effectiveness of ordinary stable manure. What is ordinary stable manure really? It is foodstuff which the animal has taken in and which up to a certain point has been assimilated by its organism, thereby stirring into activity certain dynamic forces in the organism. Its main use has not been to increase the amount of substance in the organism, for after having had its effect, it is excreted. It has become permeated with astral and etheric elements. The astral element has filled it with nitrogen-bearing forces and the etheric element with oxygen-bearing forces. The substance which emerges as dung is permeated with these forces. Imagine now: We take this substance and pass it into the soil in some form or other (the details will be dealt with later). Thus we add to the soil an etheric-astral element whose proper place is in the belly of the animal, where it produces forces of a plant-like nature. For the forces which we produce in our digestive tract are of a plant-like nature. We should be extremely thankful that we get such a residue as dung, for it carries etheric and astral forces from the interior of the organism out into the open. These forces remain with it, and it is for us to keep them there. In this way the dung will act in a life-giving and also astralising way on the soil, not only on the water

element in it, but especially on the solid element. It has the power to overcome what is inorganic in the earthly element. Now what is passed over to the soil will necessarily, of course, lose the form it originally had when taken in as food, for it has to go through an inner organic process in the metabolic system. There it enters upon a phase of decomposition and dissolution. But it is at its best just at the point where it begins to dissolve through the workings of its own astral and etheric elements. It is then that the parasites, the micro-organisms make their appearance. They find a good feeding-ground in which to develop. This is why the theory arose that these parasites are themselves responsible for the virtues in the manure. But they are only indications of the condition of the manure. If we think that by inoculating the manure with these bacteria we shall radically improve its quality, we are making a complete mistake. Externally there may seem at first to be an improvement, but in reality there is none.

World Forces into Protein

The earthly and cosmic forces work in the processes of agriculture through the substances of the Earth. And we shall only be able to pass on to the difficult practical applications during the next few days if we occupy ourselves rather more closely with the question of how these forces work through the Earth's substances. But first we must make a digression and enquire into the activity of Nature in general.

You know that in terms of contemporary chemistry, the main ingredients of albumen are the four main natural substances, carbon, oxygen nitrogen and hydrogen, and , in addition, sulphur, as, so to speak, a omnipresent mediator, and homeopathic agent in the operations of the other four. *In the great spheres of nature we can identify, Hydrogen as the dominant chemical element of the cosmic spaces, populated by the stars. Nitrogen is found concentrated in the atmospheres of some planets, with our own atmosphere comprising 80% nitrogen. Oxygen, we find only in our atmosphere, at 20%, as a expression of the very life forms it helps to support, while our Earthly forms are primarily Carbon based.*

What interests us here is the fact that the function performed in the external world by C,H,O,N and their mediator sulphur is , *the same activity as* is being individualized in man through the four organic systems. You will see then that the *Spirit inspired* Ego organisation is connected with the Hydrogen in the same way that the physical organisation is connected with Carbon, the etheric organisation with oxygen and the Astral organisation with Nitrogen. The composition of the external atmosphere is of such a nature as to furnish the ratio for the connection between the astral and etheric bodies and concurrently between their partners the physical body and ego. (2)

One of the most important questions that can be raised in discussing production in the sphere of Agriculture is that concerning the significance and influence of nitrogen. But this question concerning the fundamental nature of the action of nitrogen is at present in a state of the greatest confusion. When one observes nitrogen today in the ordinary way one is only looking at the last offshoots as it were, of its activities, its most superficial manifestations. We overlook the natural interconnections within which nitrogen is at work: nor indeed can we help so doing if we remain in enclosed within one section of Nature. To gain a proper insight into these connections we must bring within our survey the whole realm of Nature and concern ourselves with the activity of nitrogen in the Universe. Indeed - and this will emerge clearly from my exposition - while nitrogen as such does

not play the primary part in plant-life it is nevertheless supremely necessary for us to know what this part is, if we wish to understand plant-life.

In its activities in Nature nitrogen has, one might say, four sister-substances which we must learn to know if we wish to understand the functions and significance of nitrogen in the so-called economy of Nature. These four sister substances are the four substances which in albumen (protein), both animal and vegetable, combine with nitrogen in a way which is still a mystery for present-day science. The four sister-substances are carbon, oxygen, hydrogen and sulphur. If we wish to understand the full significance of albumen, it is not enough to mention the ingredients hydrogen, oxygen, nitrogen, carbon; we must also bring in sulphur, that substance the activities of which are of profound importance for albumen. For it is sulphur which acts within the albumen as the mediator between the spiritual formative element, *carried by Hydrogen and* diffused throughout the Universe and the physical element, *manifest in Carbon*. Indeed, if we want to follow the path taken by the spirit in the material world, we shall have to look for the activity of sulphur. Even if this activity is not so visible as those of other substances it is still of the utmost importance because spirit works its way into physical nature *with the help* of sulphur; sulphur is actually the *facilitator* of spirit. The ancient name "sulphur" is connected with the word "phosphor" (which means bearer of the light) because in the old days man saw spirit spreading out through space in the out-streaming light of the Sun. Hence they called the substances which are linked up with the working of light into matter like sulphur and phosphorus the "light bearers". *Indeed all the 'brother' elements of Sulphur, on the third ring of the Periodic Table, Silica, Aluminium, Magnesium Sodium and Chlorine have 'light bearing ' tasks.* And once we have realised how fine is the activity of sulphur in the economy of nature we shall more easily understand its fundamental *mediating* nature, when we consider the four sister substances - carbon, hydrogen, nitrogen and oxygen and the part they play in the workings of the Universe. The modern chemist knows very little about these substances. He knows what they look like in a laboratory, but is ignorant of their inner significance for cosmic activities as a whole. The knowledge which modern chemistry has of these substances is not much greater than the knowledge we might have of a man whose external appearance we had noticed as he passed us in the street, and of whom we had perhaps taken a snapshot, whom we call to mind with the help of the snap-shot. For what science does with these substances is little more than to take snapshots of them, and the books and lectures of to-day about them contain little more than this. We must learn to know the deeper essence of these substances.

Let us therefore start with carbon, The bearing which these things have upon plants will soon be made clear. Carbon, like so many beings in modern times has fallen from a very aristocratic position to one that is extremely plebeian. All that people see in carbon now days is something with which to heat their ovens (coal) or something with which to write, graphite, Its aristocratic nature still survives in one of its modifications, the diamond. But it is hardly of very great value to us today, in this form, because we cannot buy it. Thus what we know of carbon is very little in comparison with the enormous importance which this substance possesses in the Universe. And yet, until a relatively recent date a few hundred years ago, this black-fellow - let us call him so - was regarded as worthy to bear the noble name of "Philosophers Stone".

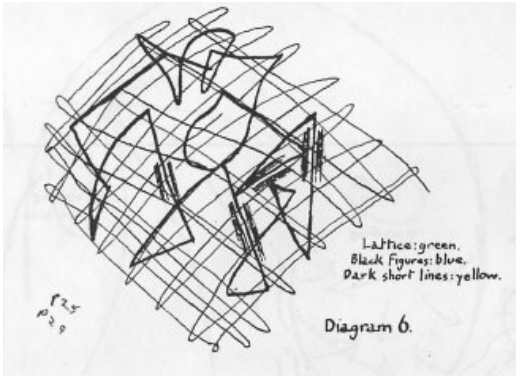
A great deal of nonsense has been spoken about what was really meant by this name. For when the old Alchemists and their kind spoke of the Philosopher's Stone they meant carbon in whatever form it occurs. And they only kept their name secret because if they had not done so, all and sundry would have found themselves in possession of the Philosopher's Stone. For it was simply carbon. But why should it have been carbon?

A view held in former days will supply us with the answer, which we must come to know again. If we disregard the crumbled form to which certain processes in nature have reduced carbon (as in coal and graphite) and grasp it in its vital activity in the course of serving the bodies of men and animals and as it builds up the body of the plant from its own inherent possibilities, the amorphous and formless substance which we generally think of as carbon will appear as the final outcome, the mere corpse of what carbon really is in the economy of Nature. Carbon is really the carrier of *ALL the* formative processes in Nature. It is the great sculptor of form, whether we are dealing with the plant whose form persists for a certain time or with the ever-changing form of the animal organism. It bears within it not only its black substantiality, but in full activity and inner mobility it carries within it the formative cosmic prototypes, *of the Stars*, the great world-imaginations from which living form in nature must proceed. A hidden *Hydrogen* sculptor is at work *with* carbon in building up the most diverse forms in Nature, this hidden *Hydrogen* sculptor makes use of sulphur. If, therefore, we regard the activities of carbon in Nature in the right way, we shall see that the cosmic spirit, *carried by Hydrogen* is active as a sculptor "moistening" itself as it were, with sulphur and with the help of carbon builds up the relatively permanent plant form, and also the human form which is dissolved at the moment it is created. For what makes the human

body human and not plant-like is precisely the fact that at each moment through the elimination of carbon the form it has taken on can be immediately destroyed and replaced by another, the carbon being united to oxygen and exhaled as carbon dioxide. As carbon would make our bodies firm and stiff like a palm tree, the breathing process wrenches it out of its stiffness unites it with oxygen and drives it outwards. Thus we gain a mobility which as human beings we must have. In plants however (and even in annuals) carbon is held fast within a fixed form.

There is an old saying that "Blood is a very special fluid". We are right in saying that the human ego pulsates in the blood and manifests itself physically in doing so; or speaking more strictly it is along the tracks provided by the carbon, in its weaving and working, forming and unforming of itself that the spiritual principle in man called the ego, moves within the blood, moistening itself with sulphur. And just as the human ego, the essential spirit of man, *carried by Hydrogen, and expressing itself through* carbon, so also does the world-ego live (through the mediation of sulphur) in that substance that is ever forming and unforming itself - carbon. The fact is that in the early stages of the Earth's development it was carbon alone which was deposited or precipitated. It was not until later that, for example, limestone came into existence, supplying man with the foundation for the creation of a more solid bony structure. In order that the organism which lives *through* the carbon might be moved about, man and the higher animals provided a supporting structure in the skeleton which is made of lime. In this way, by making mobile the carbon form within him, man raises himself from the merely immobile mineral lime formation which the earth possesses and which he incorporates in order to have solid earth-matter within his body. The bony lime structure represents the solid earth within the human body

Let me put it in this way: Underlying every living being there is a scaffolding of carbon, more or less either relatively permanent or continually fluctuating, in the tracks of which the spiritual principle, *embodied in hydrogen,* moves through the world. Let us make a schematic drawing of this so that you can see the matter quite clearly before you. (drawing No. 6) Here is such a scaffolding which the spirit *and hydrogen,* builds up somehow or



other with the help of sulphur. Here we have either the continuously changing carbon which moves in the sulphur in highly diluted form or else we have, as in the plants a more or less solidified carbon structure which is united with other ingredients. Now as I have often pointed out, a human or any other living being must be penetrated by an etheric element which is the actual bearer of life. The carbon structure of a living being must therefore be penetrated by an etheric element, which will either remain stationary about the timbers of this scaffolding, or retain a certain mobility. But the main thing is that the etheric element is in both cases distributed along the scaffolding.

This etheric element could not abide our physical earth world, if it remained alone. It would slide through instead of gripping what it has to grip in the physical earthly world if it were without a physical bearer. For it is a peculiarity of earth conditions that the spiritual must always have physical bearers. The materialists regard the physical bearer only and overlook the spiritual. To an extent they are right, because it is indeed the physical bearer which is first met with. But they overlook the fact that it is the spiritual which makes necessary everywhere the existence of a physical bearer. The physical bearer of the *energetic activity* which works in the Etheric element (we may say that the lowest level of the spiritual works in the etheric); this physical bearer which is permeated by the etheric element and *again* "moistened" as it were with sulphur, introduces into physical existence not the form *(H),* not the structure *(C),* but a continuous mobility and vitality. This physical carrier which, with help of sulphur, brings the vital activities out of the universal ether into the body, is oxygen.

Thus the part which I have coloured green in my sketch can be regarded, from the physical point of view as oxygen, and also as the brooding vibrating etheric element which permeates it. It is in the track of oxygen that the etheric element moves, with the help of sulphur.

It is this that gives meaning to the breathing process. When we breathe we take in oxygen. When the present day materialist talks of oxygen all he means is the stuff in his test-tube when he has decomposed water through electrolysis. But in oxygen there lives the lowest order of the supersensible, the etheric element: it lives there and will not be killed, as e.g. in the air around us. In the atmosphere around us the living principle in the oxygen has been killed in order that it may not cause us to faint. For any excess of the ordinary growth forces within us, if it appears where it should not be, will cause us to faint or worse. If therefore we were surrounded by an

atmosphere which contained living oxygen, we should reel about as though completely stunned by it. The oxygen around us has to be killed. And yet oxygen is from its birth the bearer of life, of the etheric element. It becomes the bearer of life as soon as it leaves the sphere in which it has the task of providing a surrounding for our human external senses. Once it has entered into us through breathing it comes alive again. The oxygen which circulates inside us is not the same as that which surrounds us externally. In us it is living oxygen, just as it also becomes living oxygen immediate it penetrates into the soil, although in this case the life in it is lower in degree than it is in our bodies. The oxygen under the earth is not the same as the oxygen above the earth. It is very difficult to come to and understanding with physicists and chemists on this subject, for according to the methods they employ the oxygen must always be separated with its connection with the soil. The oxygen they are dealing with is dead, nor can it be anything else. But every science which limits itself to the physical is liable to this error. It can only understand dead corpses. In reality oxygen is the bearer of the living ether and this living ether takes hold of the oxygen through the mediation of sulphur.

We now have pointed out two extreme polarities: On the one hand the scaffolding of carbon within which *hydrogen and* the human ego - the highest form of the spiritual given to us here on earth, displays its forces or with the case of plants the world-spiritual which is active in them. On the other hand we have the human process of breathing, represented in man by the living oxygen which carries the ether. And beneath it we have the scaffolding of carbon which in man permits of his movement. These two polarities must be brought together. The oxygen must be enabled to move along the paths marked out for it by the scaffolding: it must move along every track that may be marked out for it by the *hydrogen* carbon *complex*, by the spirit *acting in* carbon; and throughout Nature the oxygen bearing the etheric life must find the way to the carbon bearing the spiritual principle . How does it do this? What here acts as the mediator?

The mediator is nitrogen. Nitrogen, *as the carrier of the Astral,* directs the *Etheric* life into the *Physical* form which is embodied into the carbon. Wherever nitrogen occurs its function is to mediate between life *carrying oxygen* and the spiritual element *of hydrogen*, which has first been incorporated in the carbon substance. It supplies the bridge between oxygen and carbon - whether it be the animal and vegetable kingdoms, or in the soil. That spirituality which with the help of the sulphur busies itself within the nitrogen is the same as we usually refer to as astral. This spirituality, which

also forms the human astral body is also active in the earths surroundings from which it works in the life of plants, animals and so on.

In man and animals, the astral body is connected with the physical body through the etheric body and a certain connection is the normal state. Sometimes, however, the connection between the astral body and the physical body (or one of the physical organs) is closer than would normally be the case; so if the etheric body does not form a proper "cushion" between them, the astral intrudes itself too strongly into the physical body. It is from this that most diseases arise.

Thus spiritually speaking we find the astral element or principle placed in between oxygen and carbon; but the astral element uses nitrogen for the purpose of revealing itself in the physical world. Wherever there is nitrogen there the astral spreads forth in activity. The etheric life-element would float about in every direction like clouds and ignore the framework provided by the carbon were it not for the powerful attraction which this framework possesses for nitrogen; wherever the lines and paths have been laid down in the carbon there nitrogen drags the oxygen along; or more strictly speaking, the astral in the nitrogen drags the etheric element along these paths. Nitrogen is the great "dragger" of the principle towards the spiritual. Nitrogen is therefore essential to the soul of man since the soul is the mediator between life. i.e. without consciousness and spirit. There is indeed something very wonderful about nitrogen. If we trace its path as it goes through the human organism we find a complete double of the human being, such a “nitrogen man" actually exists. If we could separate it from the physical we should have the most beautiful ghost imaginable for it copies in exact detail the solid shape of man. On the other hand, nitrogen flows straight back into life.

Now we have an insight into the breathing process. When he breathes man takes in oxygen, i.e. etheric life. Then comes the internal nitrogen and drags the oxygen along to wherever there is carbon i.e. to wherever there is weaving and changing form. The nitrogen brings the oxygen along with it in order that the latter may hold on the carbon and set it free. The nitrogen is thus the mediator whereby carbon becomes carbon-dioxide and as such is breathed out. Only a small part, really of our surroundings consists of nitrogen, the bearer of astral spirituality. It is of immense importance to us to have oxygen in our immediate surroundings, both by day and by night. We pay less respect to the nitrogen around us in the air which we breathe because we think we have less need of it, and yet nitrogen stands in a

spiritual relation to us.

The following experiment might be made: One could enclose a man in a gas-chamber containing a given volume of air and then remove a small quantity of nitrogen , so the air would be slightly poorer in nitrogen than it normally is. If this experiment could be carefully carried out it would convince you that the necessary quantity of nitrogen is at once restored, not from outside, but from inside the man's body. Man has to give up some of his own supply of nitrogen in order to restore the quantitative condition to which the nitrogen is accustomed. As human beings it is necessary that we should maintain the right quantitative relation between our whole inner being and the nitrogen around us; the right quantity of nitrogen outside us is never allowed to become less. For the merely vegetative life of man a less quantity than the normal will do , because we do not need nitrogen for the purpose of breathing But it would not be adequate to the part it plays spiritually. For that the normal quantity of nitrogen is necessary.

This shows you how strongly nitrogen plays into the spiritual and will give you some idea of how necessary this substance is to the life of the plants. The plant growing on the ground has at first only its physical body and etheric body but no astral body; but the astral element must surround it on all sides. The plant would not flower if it were not touched from the outside by the astral element. It does not take in the astral element as do men and the animals but it needs to be touched by it from outside. The astral element is everywhere and nitrogen, the bearer of the astral, is everywhere; it hovers in the air as a dead element, the moment it enters into the soil it comes to life again. Just as oxygen comes to life when drawn into the soil, so does nitrogen. This nitrogen in the earth not only comes to life but becomes something which has a very special importance for agriculture because—paradoxical as it may seem to a mind distorted by materialism - it not only comes to life but becomes sensitive inside the earth. It literally becomes the carrier of a mysterious sensitiveness which is poured out over the whole life of the earth. Nitrogen is that which senses whether the right quantity of water is present in any given soil and experiences sympathy; when water is deficient it experiences antipathy. It experiences sympathy when for any given soil the right sort of plants are present, and so on. Thus nitrogen pours out over everything a living web of sensitive life, above all nitrogen knows all those secrets of which we know nothing in an ordinary way, of the planets Saturn Sun, Moon and so on, and their influences upon the form and life of plants, of which I told you yesterday, and in the preceding lectures. Nitrogen that is everywhere abroad, knows these secrets very well. It is not at all

unconscious of what emanates from the stars and becomes active in the life of plants and of the earth. Nitrogen is the mediator which senses just as in the human nerves and senses system, it also mediates sensation. Nitrogen is in fact the bearer of sensation. Thus if we look upon nitrogen, moving about everywhere like fluctuating sensations, we shall see into the intimacies of the life in Nature. Thus we shall come to the conclusion that in the handling of nitrogen something is done which is of enormous importance for life of plants. We shall study this further in the subsequent lectures.

In the meantime there is, however, one thing more to be considered. There is a living co-operation of the *Hydrogen's* spiritual principle which has taken shape within the carbonic framework, with the astral principle working within nitrogen, which permeates that framework with life and sensations, that is, stirs up a living agility in the oxygen. But in the earthly sphere this co-operation is bought about by yet another *aspect of an* element, which links up the physical world with the expanses of the cosmos. For the earth cannot wander about the Universe as a solid entity cut off from the rest of the Universe. If the Earth did this it would be in the same position as a man who lived on a farm, but wished to remain independent of everything that grew in the fields around him. No reasonable man would do that. What today is growing in the fields around us tomorrow will be in human stomachs and later will return to the soil in some form or another. We human beings cannot isolate ourselves from our environment. We are bound up with it and belong to it as much as my little finger belongs to me. There must be a continuous interchange of substances, and this applies also to the relation between earth with all its creatures and the surrounding Cosmos. All that is living on earth in physical shape must be able to find its way back into the Cosmos where it will be in a way purified and refined.

We have in the first place the carbon framework (which I have coloured blue in the drawing), then the etheric oxygenous life-element (coloured green) and then, proceeding from the oxygen and enabled by nitrogen to follow the various lines and paths within the framework, we have the astral element which forms the bridge between carbon and oxygen. I could indicate everywhere here how the nitrogen drags into the blue lines which I have indicated schematically with the green lines. But the whole of the very delicate structure which is formed in the living being must be able to disappear again. It is not the spirit which disappears, but that which the spirit *and Hydrogen* has built up in the carbon, and into which it has drawn the etheric life borne in the oxygen. It must disappear not only from the

earth, but dissipate into the Cosmos. This is done by a substance which is allied as closely as possible to the physical and yet is allied as closely as possible to the spiritual: This activity is *the second face of* hydrogen. Although hydrogen is itself the most attenuated form of the physical substance, *due it carrying the basic imprint from the stars, upon which the physical body forms,* it goes still further and dissipates physical matter which, *again helped* by sulphur, floats away into that cosmic region in which matter is no longer distinguishable. One may say then: Spirit has first become physical*, carried on Hydrogen's incarnating impulse*, and lives in the body at once in its astral form and reflecting itself as Ego. There it lives physically as spirit transformed into something physical. After a time the spirit begins to feel ill at ease. It wishes to get rid of its physical form. Moistening itself once again with sulphur, *Spirit rides Hydrogens excarnating nature,* by means of which it can yield up any kind of individual structure and give itself over to the cosmic region of formless chaos, where there is no longer any determinate organisation. Hydrogen carries away all that the astral principle has taken up as form and life, and carries it out the expanses of the Cosmos, so that it can be taken up again from thence, as I have already described. Hydrogen in fact, *brings into manifestation and then* dissolves, everything.

Thus we have these 5 substances which are the immediate representatives of all that works and weaves in the realm of the living and also in the realm of the seemingly dead, which in fact is only transiently so: Sulphur. Carbon, Hydrogen, Oxygen and Nitrogen, each of these substances is inwardly related to its own particular order of *energetic* entity. They are therefore something quite different from which our modern chemistry refers to by the same names. Our chemistry speaks only of the corpses of these substances, not of the actual substances themselves. These we must learn to know as something living and sentient, and, curiously enough hydrogen, which seems the least dense of the five and has the smallest atomic weight, is the least spiritual among them.

Now consider: What are we actually doing when we meditate? (I am compelled to add this ensure that these things do not remain among the mists of spirituality) The Oriental has meditated in his own way. We in Middle and Western Europe meditate in ours. Mediation as we ought to practise it only slightly touches the breathing process; our soul is living and weaving in concentration and meditation. But all these spiritual exercises have a bodily counterpart, however subtle and intimate. In meditation, the regular rhythm of breathing, which is so closely connected with man's life,

undergoes a definite if subtle change. When we meditate we always retain a little more carbon-dioxide in us than in the ordinary everyday consciousness, We do not, as in ordinary life, thrust out the whole bulk of carbon-dioxide into the atmosphere where nitrogen is everywhere around us. We hold some of it back.

Now consider: If you knock your head against some thing hard, like a table, you become conscious only of your own pain. But if you gently stroke the surface of the table, then you will become conscious of the table. The same thing happens in meditation. It gradually develops an awareness of the nitrogen all around you. That is the real process in meditation. Everything becomes an object of knowledge, including the life of the nitrogen around us. For nitrogen is a very learned fellow. He teaches us about the doings of Mercury, Venus, etc. because he knows or rather senses them. All these things rest upon perfectly real processes. And as I shall show in greater detail, it is at this point that the spiritual working in the soul activity, begins to have a bearing upon Agriculture. This interaction between the soul-spiritual element and that which is around us is what has particularly interested our dear friend Stegemann, For, indeed, if a man has to do with Agriculture it is a good thing if he is able to meditate, for in this way he will make himself receptive to the manifestations of nitrogen. If one does become receptive in this way, one begins to practise Agriculture in quite a different way and spirit. One suddenly gets all kinds of new ideas; they simply come and one then has many secrets in large estates and smaller farms.

I do not wish to repeat what I said an hour ago but I can describe in another way, Take the case of a peasant who walks through his fields. The scientist regards him as unlearned and stupid. But this is not so, simply because - forgive me but I speak the truth - simply because instinctively a peasant is given to meditation. He ponders much throughout the long winter nights. He acquires a kind of spiritual knowledge, as it were, only he cannot express it. He walks through his fields and suddenly he knows something; later he tries it out. At any rate this is what I found over and over again in my youth when I lived among peasant folk. The mere intellect will not be enough, it does not lead us deep enough, For after all nature's life and weaving is so fine and delicate that the net of intellectual concepts - and this is where science has erred of recent years - has too large a mesh to catch it.

Now all these substances of which I have spoken Sulphur, Carbon, Nitrogen, Hydrogen are united in albumen. This will enable us to see more clearly into the nature of seed formation. Whenever carbon, hydrogen and nitrogen are

present in leaf, blossom, calyx or root they are always united to other substances in some form or other. They are dependent upon these other substances. There are only two ways in which they can become independent. One is when the hydrogen carries all individual substances out into the expanses of the Cosmos and dissolves them into the general chaos; and the other is when the hydrogen, *inspires the Cosmic Forces* to drive the basic element of the protein (for albumen) into the seed formation and there makes them independent of each other so that they become receptive of the influences of the Cosmos. In tiny seed there is chaos, and in the wide periphery of the Cosmos there is another chaos, and whenever the chaos at the periphery works upon the chaos within the seed, new life comes into being.

Now look how these so-called substances, which are really bearers of spirit, work in the realm of Nature. Again we may say that the oxygen and nitrogen inside man's body behave themselves in an ordinary way, for within man's body they manifest their normal qualities. Ordinary science ignores it because the process is hidden. But the ultimate products of carbon and hydrogen cannot behave in so normal a fashion as do oxygen and nitrogen. Let us take carbon first. When the carbon, active in the plant realm enters the realms of animals and man it must become mobile - at least transiently. And in order to build up the fixed shape of the organism it must attach itself to an underlying framework. This is provided on the one hand by our deeply laid skeleton consisting of limestone, and on the other hand by the silicious - element which we always carry in our bodies; so that both in man and in the animals carbon to a certain extent masks *hydrogen's* formative force. It climbs up, as it were along the lines of formative forces of limestone and silicon. Limestone endows it with the earthly formative power, silicon with the cosmic. In man and the animals carbon does not as it were claim sole authority for itself, but adheres to what is formed by lime and silicon.

But lime and silicon are also the basis of the growth of plants. We must therefore learn to know the activities of carbon in the breathing, digestive and circulatory processes of man in relation to his bony and silicious structure - as though we could, as it were, creep into the body and see how the formative force of carbon in the circulation radiates into the limestone and silicon. And we must unfold this same kind of vision when we look upon a piece of ground covered with flowers having limestone and silicon beneath them. Into man we cannot creep; but here at any rate we can see what is going on. Here we can develop the necessary knowledge. We can see how the oxygen element is caught up by the nitrogen element and carried down

into the carbon element, but only in so far as the latter adheres to the lime and silicon structure. We can even say that carbon is only the mediator. Or we can say that what lives in the environment is kindled to life in oxygen and must be carried into the earth by means of nitrogen, where it can follow the form provided by the limestone and silicon. Those who have any sensitiveness for these things can observe this process at work most wonderfully in all the papilionaceous plants (Leguminosae) that is in all the plants which in Agriculture may be called collectors of nitrogen, and whose special function it is to attract nitrogen and hand it on to what lies below them. For down in the earth under those leguminosae there is something that thirsts for nitrogen as the lungs of man thirst for oxygen - and that is lime. It is a necessity for the lime under the earth that it should breathe in nitrogen just as the human lungs need oxygen. And in the papilionaceous plants a process takes place similar to that which is carried out by the epithelium issue in our lungs lining the bronchial tubes. There is a kind of in-breathing which leads nitrogen down. And these are the only plants that do this. All other plants are closer to exhalation. Thus the whole organism of the plant-world is divided into two when we look at the nitrogen-breathing. All papilionacae are, as it were, the air passages. Other plants represent the other organs in which breathing goes in a more secret way and whose real task is to fulfil some function. We must learn to look upon each species of plant as placed within a great whole, the organism of the plant-world, just as each human organ is placed within the whole human organism. We must come to regard the different plants as part of a great whole, then we shall see the immense importance or these Papilionacae. True, science knows something of this already but it is necessary that we should gain knowledge of them from these spiritual foundations, otherwise there is a danger as tradition fades more and more during the decades, that we shall stray into false paths in applying scientific knowledge. We can see how these papilionacae actually function. They have all the characteristics of keeping their fruit process which in other plants tends to be higher up in the region of their leaves. They all want to bear fruit before they have flowered. The reason is that these plants develop the process allied to nitrogen far nearer to the earth (they stimulate bacteria to fix nitrogen along their roots) than do the other plants, which unfold this process at a greater distance from the surface of the earth. These plants have also the tendency to colour the leaves, not with the ordinary green, but with a rather darker shade. The actual fruit, moreover undergoes a kind of atrophy, the seed remains capable of germination for a short time only and then becomes barren. Indeed, these plants are so organised as to bring to special perfection what the plant-world receives from Winter and not from Summer. They have, therefore a tendency to wait for Winter. They want to wait with what they

are developing for the Winter. Their growth is delayed when they have a sufficient supply of what they need, namely, nitrogen from the air which they can convey below in their own manner. In this way one can get insight into the becoming and living *that* goes in and *is* above the soil.

If in addition you take into account the fact that lime has a wonderful relationship with the world of human desires you will see how alive and organic the whole thing becomes. In its elemental form as calcium lime is never at rest; it seeks and experiences itself; it tries to become quick-lime, i. e. to unite with oxygen. But even then it is not content; it longs to absorb the whole range of metallic acids, even including bitumen which is not really a mineral. Hidden in the earth lime develops the longing to attract everything to itself. It develops in the soil what is almost a desire nature. It is possible if one has the right feeling in these matters, to sense the difference between it and other substances. Lime fairly sucks one dry. One feels that it has a thoroughly greedy nature and that wherever it is it seeks to draw to itself also the plant-element. For indeed everything that limestone wants lives in plants, and it must continually turn away from the lime. What does this? It is done by the supremely aristocratic element which asks for nothing but relies upon itself. For there is such an aristocratic substance. It is silicon. People are mistaken in thinking that silicon is only present where it shows its firm rock-like outline. Silicon is distributed everywhere in homeopathic doses. It is at rest and makes no claim on anything else. Lime lays claim to everything, silicon to nothing. Silicon thus resembles our sense-organs which do not perceive themselves but which perceive the external world. Silicon is the general external sense organ of the earth, lime the representing general which desires; *the* clay *humus complex* mediates between the two. Clay — *aluminium silicate*— is slightly closer to silicon and yet *with humus* it acts as a mediator with lime. Now one should understand this in order to acquire a knowledge supported by feeling. One should feel about lime that it is a fellow full of desires, who wants to grab things for himself; and about silicon that it is a very superior aristocrat who becomes what the lime has grabbed, carries it up into the atmosphere, and develops the plant-forms. There dwells the silicon, either entrenched in his moated castle, as in the horse-tail (equisetum), or distributed everywhere in fine homeopathic doses, where he endeavours to take away what the lime has attached. Once again we realise that we are in the presence of an extremely subtle process of Nature.

Carbon, *by enacting the hydrogens archetypal impulse,* is the really formative element in all plants : it builds up the framework. But in the course of the earth's development its task has been rendered more difficult. Carbon

could give form to all plants as long as there were water below it. Then everything would have grown. But since a certain period, lime has been formed underneath and lime disturbs the work, and because the opposition of the limestone had to be overcome, carbon allies itself to *its periodic table brother* silicon, and both together, in combination with clay, - *aluminium silicate, and aluminium's brother Boron* — they once again start on their formative work. How, in the midst of all this, does the life of a plant go on? Below is the limestone trying to seize it with its tentacles, above is the silicon which wants to make it as long and thin as the tenuous water-plants. But in the midst of them is carbon which *builds* the actual plant-forms and brings order into everything. And just as our astral body brings about a balance between our Ego and etheric body, so nitrogen works in between, as the astral element.

This is what we must learn to understand - how nitrogen, *stabilised within humus,* manages things between lime, clay and silicon. And also between what the lime is always longing for below, and what silicon seeks always to radiate upwards. In this way the practical question arises: What is the correct way of introducing nitrogen into the plant-world? This is the question that will lead us over to deal with the different methods of manuring the ground.

Controlling the Activities

The indications given yesterday *(see page 80)* as to the treatment of manure by the use of cows' horns were intended, of course, only to show a method of improving manure. Manuring as such remains, and we shall speak today of the way in which manure has to be applied by those who have grasped that all that is living must be kept within the realm of life. We saw that the etheric life forces should never be allowed to leave that which is within the region or sphere of growth. That is why we found it to be so important to know that the soil, out of which the plant grows and which surrounds its roots, is itself a kind of continuation of the living plant-like nature, of the earth being. Moreover I pointed out yesterday how we can imagine the transition from the heaped-up mound of earth, inwardly vitalized by the humus in it to the bark which surrounds the tree and encloses it. It is only natural, in modern times, when all understanding has been lost of the great interrelations in Nature, that insight into the fact that the life which embraces soil and plant alike, extends into such secretions of the living realm as appear in the form of manure, should also have been lost. An understanding of how the forces of this all embracing life work on in the manure was also bound to go as time went on. As I said in the discussion yesterday, it is no part of the methods of Spiritual Science to attempt by fanatical agitation and turbulence forcibly to interfere with the achievements in all the different spheres of modem life; rather it gives full recognition to the advances which have been made." And only those things should be opposed, if I may use the word, which rest on completely false assumptions and are the outcome of the modern materialistic conception of the world. These achievements, however, must be complemented by the results issuing from a living conception of the world in the varied spheres of life. I shall therefore not deal with the different ways of preparing manure - whether from stable manure, from liquid manure or from compost - as much has already been said in this connection. Besides we shall have the opportunity of dealing with this in this afternoon's discussion. I only wish to assume now that we are right in saying that in the practice of agriculture we are bound to exploit the soil, because in distributing the produce of agriculture far and wide we are actually depriving the earth and even the air of forces. These forces have to be replaced, and that is why the manure must be prepared in such a way as to contain the forces which the impoverished soil needs to become vitalised again. Now it is precisely on this point that a number of errors have arisen through a materialistic conception of the world.

In the first place a careful study is made nowadays of bacteria, of micro-organisms. To these is attributed the power of creating the proper

proportions of the different substances in the manure. Great stress is laid upon the activity of the bacteria in the manure. Experiments have been made in inoculating the soil with bacteria. Such experiments are clever, even logical - but as a rule have no lasting influence and are of small use. This is because they are based on assumptions somewhat resembling the following: A large number of flies are found in a room and because of this the room is considered dirty. But the truth is that the flies are there because the room is dirty. Nor will the room ever become any cleaner by our devising methods of increasing the number of flies on the supposition that they will eat the dirt, nor by diminishing their number. Far more will be achieved by a direct attack upon the dirt than by any such speculative methods as these. In the same way, when animal excrements are used as manure, the tiny living beings which appear through the processes at work in the manure substance can only really be regarded as a very valuable symptom of certain conditions which the manure substance is passing through; and therefore not something which it is important to implant or breed: one might just as well do the reverse and suppress them. Our thoughts on these things should weave within the whole living content of the farm and not be limited to an atomistic view of these micro-organisms. Now obviously one should not make such a statement unless one can show the ways and means of carrying it out. True, what I have said about the bacteria has been emphasised in various quarters; but it is important not only to be able to make a correct statement, for a negative statement has no value in practice. One must be able to make positive suggestions. If one has no positive suggestions to make it is better to refrain from emphasising the merely negative view, as this only causes annoyance.

A second point is this. Under the influence of the materialistic outlook of modern times, the practice has come into favour of treating manure with all manner of in-organic compounds or elements. Experience has shown, however, that this method produces no lasting results. Nor can it do so, for we must clearly understand that in attempting to improve the manure by adding minerals, we vivify only the watery part of the soil. But to ensure sound growth in a plant, it is not enough to organise and vivify the water for this does not distribute any vitality as it trickles through the soil. The soil must be vitalised directly. This cannot be done with mineral substances, but only with organic substances which have been suitably prepared so as to organise and quicken the solid earth element. This is the contribution of Spiritual Science to agriculture: to provide knowledge of the way to stimulate life in manure, either solid or liquid - indeed anything that can be used in this way - but what we do must remain within the realm of the living. Spiritual Science always seeks to gain an insight into the larger connections of life and does not pay much regard to the Microscopic view and the conclusions drawn

from it, because this view is not of primary importance. The observation of the Macroscopic, of the larger range of Nature's activities - that is the task of Spiritual Science, but we must first know how to penetrate into these activities.

In all agricultural literature you will find the following statement, based no doubt upon the experiences which have been collected. It is said that nitrogen, phosphoric acid, calcium, potash, chlorine, etc. - even iron, all these are of great value to soil which is to be used for plants; but silicic acid, lead, arsenic, mercury, even soda have only value as so-called stimuli in promoting plant growth. People show by such statements that they are really working in the dark, and it is fortunate that - because of their traditional knowledge - they do not strictly adhere to this principle in their treatment of plants. Indeed, it cannot be adhered to; for what is the truth of the matter ?

The truth is that Mother Nature will abandon us without mercy, if we do not pay proper regard to potash, limestone or phosphoric acid. We can, however, with comparative impunity disregard her silicic acid, lead, mercury, arsenic, etc. The heavens give us the silicic acid, lead, mercury and arsenic we need; they give them freely whenever the rain falls. In order, however, to have the right amount of phosphoric acid, potash and limestone in the soil, it must be worked upon and manured in the right way. These elements are not supplied freely by the heavens: Thus by continuous use of the soil it becomes impoverished, and therefore needs to be manured. This compensation by way of manure may, and in many cases does become too weak in time. When this happens, we rob the earth and leave it permanently impoverished. We must see to it that the true Nature-process can take place to the full. What have been called merely "stimuli" are actually the most important factors. All round the earth are the very substances though in highly diluted form which are generally held to be unnecessary, but which the plants require as urgently as they do those which come to them from the earth. Mercury, arsenic and silicic acid are sucked in by the plants from the earth after these substances have been radiated into the earth from the universe. Now we, as human beings, can prevent the soil from thus absorbing from the periphery what the plants need. By continued, unthinking use of manure, we can quite well prevent the earth from seeking, out and absorbing the silicic acid, lead and mercury which come to it in the finest homeopathic doses from the surrounding universe and which are required by the plant. The plant needs the help of these substances in order to build up its carbon structure. To ensure, therefore, that the plant gets all it needs from the surrounding universe, we must work on our manure, not only as I explained yesterday, but with other things as well. It is not enough to add to the manure substances which we

think it requires; we must add living forces. For living forces are far more important to the plant than mere material forces and substances. Be a soil never so rich in this or that substance, we should still not promote plant growth if we did not give the plant by manuring the power to absorb into its body the active forces contained in the soil. Now when it comes to living principles, it is not generally known how very powerfully minute quantities will work. Since Frau Dr. Kolisko's research work on the activity of "smallest entities" so brilliantly established as fact what until then had been more guess-work in homeopathy, we can, I think, regard it as a scientific fact that it is from the small entities (quantities) that the radiating forces necessary for the organic world are released, when these small entities are used in the appropriate way. And in manuring we shall not find it at all difficult to use the smallest entities.

We have seen how we can prepare these "smallest entities" quite readily within cows' horns, and how we are able to add to the forces contained in ordinary manure these other forces which are applied in homeopathic doses. But we must try out all ways of properly vitalizing the manure, so that it retains the right amount of nitrogen and other substances and is thus vivified and enabled to convey the necessary vitality to the soil.

Today I should like to give indications for the addition in small doses of certain preparations to the manure (quite apart from what can be done with the contents of the cows' horn) to vivify it to such an extent as will enable it to carry its own vitality into the soil from which the plants spring.

I shall mention various things, but wish to emphasis that in places where the ingredients are difficult to obtain, substitutes can, if necessary, be found, (There is only one plant for which there is no substitute, because its properties are so unique that they are scarcely to be found in any other species). In the first place it is necessary to ensure that the basic substances in the organic world - carbon, hydrogen, nitrogen and sulphur— are combined in the right way with other substances in the organism, especially with potash salts. We must not have regard merely to the quantity of the potash salts which the plant requires (as is well known, it is the potash salts which give the plant organism its scaffolding what it has of solidity and structure) the main thing is that this potash content shall be so worked up that when it comes within the ambit of what takes place between soil and plant, it acts properly within the organic process towards that which constitutes the actual body of the plant, viz. the albuminous substances. To accomplish this we proceed as follows:-

Yarrow

You take common yarrow (or milfoil) a plant which it is generally quite easy to obtain. In any place where it does not grow, the dried plant can be used.

This yarrow is a wonderful work of creation. (The same is true of every plant, but if we compare yarrow with any other flower, we realise how particularly wonderful it is). It contains that substance with which, as I told you, the spirit moistens its fingers when it wishes to send carbon, nitrogen and other substances to their places in the organism where these are needed. Yarrow is like the ideal model which some creator of plants must have had before him when he had the task of bringing sulphur into its true relationship with other vegetable substances. One may say, the spirits of Nature have never brought the distribution of sulphur to such perfection as in yarrow (milfoil). And if we know the effects this plant can produce in the animal or human organism - how with correct biological use, it can set right all troubles which are caused by any weakness in the astral body, then we can further trace its particular nature (Dr. Steiner says "its milfoilness") throughout the whole process of plant growth in Nature. Its effect is extremely salutary when growing wild at the edge of fields planted with cereals, potatoes or any other cultivated plants. Yarrow should never be exterminated. It should, of course, not be allowed to spread so as to become a nuisance - it can never be harmful - but like some human beings whose mere presence is felt to be beneficent, so yarrow growing freely has an extraordinarily beneficial effect on its surroundings.

This is what can be done with milfoil: take the blossoms, the umbrella-like infloresence, just as you do when the plant is intended for medicinal use. They should be plucked as fresh as possible and allowed to dry for a short time. If you cannot obtain fresh flowers, then take some that have been dried and sprinkle them with some of the liquor strained off from dried leaves which have been boiled in water. Then take one or two handfuls of the yarrow blossoms well pressed together (mark that we remain always within the region of the living) and place them in a deer's bladder. Tie the bladder up and hang it in a sunny place, leaving it there throughout the summer. When autumn comes, take down the bladder and bury it in the soil but not too deeply, leaving it there throughout the winter. Thus during a whole year, the yarrow flowers (there is no harm in using flowers in which the fruit has begun to set) in the deer's bladder have been exposed, partly above and partly below the earth's surface, to the right influences. You will find that during the winter, they have assumed a very peculiar consistency and in this condition they will keep for as long as you like. You can add some of this substance from the deer's bladder to a manure heap as big as a house by a simple distribution (very little work is required) and the radiation works. However much the substance is scattered through the heap the radiation is so powerful (and the materialist who talks about radium will believe in radiation) that it will work on any sort of manure, whether liquid, solid or compost. The substance obtained from the yarrow has such a quickening and

refreshing effect upon the manure, that when it is used in the usual way it does much to restore that of which we have robbed the soil. The manure is again given the possibility of so vivifying the soil that it can once more absorb the other cosmic substances, the silicon, lead, etc., which come to the earth in the finest homeopathic doses. The Members of the Agricultural Circle should test this out by experiment. You will see how well it will succeed.

Now let us put the following question, for we should always act out of insight and not without it. We have learned the virtues of the common yarrow. Its content of sulphur in highly homeopathic distribution, standing in an ideal combination with potash, works so splendidly from the plant alone that it is able to radiate its activities over a large area. Then why is there need for a bladder- and that of a deer?

The reason why we use a deer's bladder is found when we gain insight into the whole process which is bound up with it. The deer is an animal which stands in a peculiarly close relation, not so much to the earth as to that which is of a cosmic nature in the periphery of the earth; hence its antlers, whose function I pointed out yesterday. Now the properties of the yarrow are preserved by means 'of that process which takes place between the kidneys and the bladder, and this applies to both human and animal organisms. This process is itself dependent upon the nature of the substance of the bladder. In the bladder of the deer, however tenuous its substantiality may be, there are forces which are connected not, as in the case of cattle, with the animal's Interior, but with cosmic forces; the deer's bladder is almost a reflected image of the cosmos. And in putting the yarrow into the bladder, we greatly increase its capacity to combine its sulphur with the other substances. In the treatment I have given for yarrow, we have therefore something fundamental for the improvement of manure. Moreover we have not gone outside the region of the living, and have certainly not entered the realm of in-organic chemistry. That is the important point.

Chamomile

Let us take another example. If we wish to enable the manure to absorb so much life that it can transmit it to the soil on which the plant is to grow, we must also render the manure capable of closely binding together all substances necessary for plant growth: not only potash but also calcium and its compounds. In yarrow potash forces are predominant. If we wish to capture calcium as "well, we require a plant which, though it does not arouse one's enthusiasm to the same extent as yarrow, nevertheless contains sulphur in homeopathic distribution. With this sulphur it attracts the other substances and blends them into an organic process. I refer to chamomile or

chamomilla officinalis. It is not enough to say that chamomile is distinguished by the amount of potash and calcium it possesses. The yarrow plant develops its sulphur forces especially in the potash-formative process, and for this reason it possesses exactly that amount of sulphur required to "work-up" potash. The chamomile, however, "works-up" calcium for the purpose of excluding certain tendencies towards fruit formation which are harmful, and in this way keeps the plant healthy. The camomile plant has some sulphur in it, but in a different proportion, because it is calcium that has to be worked upon. Now, bearing in mind that Spiritual Science always looks at the large, the macrocosmic cycles of events and not so much at that which is microscopic, let us follow the process undergone by chamomile which has been absorbed by a human or animal organism. For all the processes which the chamomile undergoes there, the bladder has hardly any importance, while the substance of the intestinal walls has great importance. If, therefore, we wish to work with chamomile as we did with yarrow the beautiful delicate little yellow-heads of blossom must be plucked and treated in the same way as the umbels of the yarrow, but instead of putting them in a bladder, we must put them in the intestines of horned cattle. This is quite an amusing proceeding. Instead of following the customary usage and making ordinary sausages, we have to make sausages filled with chamomile prepared in the way indicated (for yarrow). Here again, using only ingredients taken from the realm of the living world, we have something which only needs to be exposed to the right natural influences to become of value. In this case we have to allow those living forces to work which have the closest possible kin-ship to the soil. We must therefore place these precious little sausages (for they really are precious) under the ground, not very deeply, in soil which is as rich as possible in humus, and leave them all through the winter. For this purpose we should select places where the snow will remain lying a fairly long time, and where the sun will shine upon the snow. This will be the best way of attracting the cosmic-astral influences to the place where these precious little sausages lie buried. In spring they are dug up and put aside as before. Their contents are added to the manure in exactly the same way as was done with the prepared yarrow. It will be found that manure so treated will have a more stable nitrogen content than other manure, and it will also have the property of so vivifying the soil that this will promote very strongly the growth of plants. Furthermore, the plants will be more healthy, really healthier, than they would otherwise be.

I know well enough that these may appear rather crazy notions, but you must remember that many things which have at first seemed to be crazy have been accepted a few years later. You should have read the Swiss papers and seen the offensive objections raised when the idea of constructing mountain railways was first mooted, yet in a very short time the

mountain railways were built and nowadays nobody thinks that the man who planned them was a fool. It is all a question of putting aside prejudice.

As I said before if these two plants are difficult to obtain, others can be used in their stead, though not with such good results. The plants can, of course, be used after they have been dried.

Nettle

There is, however, one plant which it is difficult to find a substitute for its good influence upon manure. It is one which is not very popular, for if we like a thing we usually want to stroke it; I refer to the stinging nettle. The stinging nettle is really the greatest of benefactors to plant growth and can scarcely be replaced by any other plant. If unobtainable fresh it must be used dried. It is a regular Jack-of-all-trades. It can do extraordinary things. It, too, bears that within it, which introduces the spiritual element everywhere and works with it as I have explained. Again in addition to the potash and calcium which the nettle bears along in its radiating and streaming currents it also possesses a species of radiating iron forces which, as regards the whole course of Nature, are almost as health-promoting as are the iron forces in our blood. The stinging nettle does not really deserve to be despised as it so often is. Indeed, it ought to win everyone's heart, be cherished by everyone, for in its wonderful inner workings it plays a similar part in Nature to that played by the heart in the human organism. The stinging nettle is really a great boon. In order, therefore, to draw iron from the soil, it is necessary to plant stinging nettles in it somewhere where they will do no harm. We should do this because these plants like iron, they attract it to themselves and thus free the top layer of soil from it. If we cannot remove the iron as such, we can at least weaken its effects upon plants in this way. (If Count, Keyserlingk will excuse my making a personal reference, I would say that the planting of nettles on this estate would be of particular benefit). I wish to point out that the mere presence of nettles has a significance for plant growth in the whole district.

Now if you wish still further to improve your .manure, take some stinging nettles, allow them to wither a little, press them together slightly and then place them, not in a bladder nor in intestines, but directly into the soil, surrounded, perhaps, by a thin layer of peat dust, so that they will be separated a little from Immediate contact with the soil. Make a note of where they are placed, so that when you afterwards dig them out you do not take merely soil. They must be left there all through one winter and a summer; they must lie buried for a whole year, and then their substance will have become enormously powerful. If this is then added to the manure in the manner mentioned before, it will cause it to be inwardly sensitive. The manure will

actually become sensitive, as though it really had some nous. It will not allow anything to decay in a wrong way nor give off nitrogen in a wrong way and so on. By adding this substance to the manure in a sense we really give it nous and enable it to make the soil into which it is mixed intelligent too, so that the soil will behave in-dividually towards the different plant species growing in it. This addition of Urtica dioica has the effect of Impregnating the soil with nous.

Modern methods of improving manure, however surprising they may be in their external effects, are, in the last resort, only methods for turning out fine-looking agricultural produce destined merely to fill human stomachs. There will come a time when it will no longer possess any real nutritive value. We must not be deceived by large and blown-out products of the soil. The point is that they should be firm and solid and have real nutritive value. Now it may be that somewhere on our farm, plant diseases occur, I shall speak of these in a general way . People today are fond of specialisation and speak of this or that disease. This is all right from a theoretical scientific point of view: one must know how the symptoms of one disease differ from those of another. But just as in the case of a doctor for human beings, it is not so useful to describe an illness as it is to cure it.

Oak Bark

It is possible to describe an illness very accurately, to know exactly what is going on in the organism in terms of modern physiology and physiological chemistry, and yet one may be unable to heal it. Healing is not based on the microscopic changes in tissues and cells, but on a knowledge of the larger connections; this must also be our attitude to the plant nature. And. since plant nature is in this respect simpler than that of the anime or man, so its healing is a more general process and when sick it can be healed with a kind of "cure-all" remedy, If this were not so, we should often be in a fix with regard to plants, as we are with animals, though not with human beings. For a man can tell us where he feels pain. Animals and plants cannot; and it is fortunate that. here the curative process is almost the same for all plants. A large number of plant diseases (although not all of them) can really be arrested as soon as they are noticed by a rational management of our manuring - namely in the following way: We must then add calcium to the soil by means of the manure. But it will be of no use if the calcium is not applied in a living condition. If it is to have a healing effect it must remain within the realm of the living. Ordinary lime or the like is of no use here. Now we have a plant which is very rich in calcium - seventy-seven per cent, of its substances is calcium albeit in very fine distribution. This is the oak and more especially its bark. In the bark we have something which is at an inter-mediate stage between plant and living earth. You will remember what I said

to you about the kinship between bark and live earth. For calcium as required in this connection the calcium structure in the bark of the oak is almost ideal. Calcium in a living state (not dead, though even then it has an effect) has the property which I have already described to you: it restores order where the etheric body is working too strongly so that the astral element is prevented from reaching the organic substances. Calcium kills (damps down) the forces of the etheric body and so sets free those of the astral body. This is characteristic of all limestone. But if it is necessary for an over-powerful etheric element to be damped down and contracted in a regular way - not suddenly nor jerkily so that shocks are produced - but in a steady and orderly fashion, we should use calcium in the particular form in which it is to be found in the bark of the oak tree.

For this purpose we collect some oak bark Just as it comes to hand. We do not need much. We collect it, chop it up until it has a crumbly consistency and put the crumbs into the hollow part of a skull or cranium of any one of our domestic animals - it is almost immaterial which one we choose. The skull should be closed up again with bony material and put into the ground - not very deeply. Then we cover it with peat moss and direct on to the spot, through a gutter or some such contrivance, a maximum amount of rainwater. Alternatively one might put some rotting plant substance into a wooden tub into which rainwater could flow and drain off again. This would produce a sort of plant slime and in this the bony receptacle with its content of oak-bark crumbs could be burled. It should be left there through the autumn and the winter, snow water being just as effective as rainwater. Prepared thus, this substance contains something which, when it is added to our manure, endows it with the power - the prophylactic property - of fighting and arresting harmful plant disease.

We have now dealt with four substances to be added to manure. All this Involves a certain amount of work. But If you think It over, you will see that it Involves less work than the complicated trouble taken in agricultural-chemical laboratories, and which, moreover, has to be paid for. The methods I have outlined to you today are more profitable from the point of view of general economy.

Dandelion

We still need something, however, which will attract silicic acid from the cosmic environment In the right way, for we must have silicic acid. In the plant, and in the course of time the soil loses the power to absorb this very substance. The loss is very gradual and therefore passes unnoticed. Those who look only at the microcosmic and do not consider the macrocosmic set little store by this loss In silicic acid, because they think It has no importance

for plant growth. It is of the utmost importance, however, although to be aware of this one must know the following. Such knowledge is, however, no longer regarded In learned circles as a sign of mental confusion, as was the case heretofore, for these circles are themselves already speaking of the transmutation of elements. Observation of various chemical elements has In this respect brought the. materialistic lion to heel. But there are certain things constantly going on around us of which science knows nothing. If people knew something about them It would be easier for them to accept such things as I have been expounding. I know very well that the hard boiled modern thinker will exclaim: "But you have told us nothing of how the nitrogen content in the manure is Increased." As a matter of fact I have spoken of this all the time, in what I said about yarrow, chamomile and nettles. For in organic processes there is a secret alchemy. This hidden alchemy will, for example, trans-form potash into nitrogen provided only that the potash is working in the right way and will do the same even with lime if the lime is active in the right way.

In the plant there are the four elements of which I have spoken.. Besides sulphur there is also hydrogen. I have told you of the significance of hydrogen. Now there Is a mutual relation between lime and hydrogen, just as there is the well-known relation between oxygen and nitrogen in the air, and even according to the Purely external standards of analytical chemistry, this ought to betray the fact that there is a kinship between the way In which oxygen and nitrogen are connected in the air and that in which lime and hydrogen are connected in organic processes. Under the influence of hydrogen, lime and pot-ash are constantly being changed into nitrogenous matter, and finally into actual nitrogen. And the nitrogen which has come into being in this way has a tremendous value for plant growth; but it must be such as has been produced in the way I have described,

Silicic acid, as we know, contains silicon and this in its turn undergoes transmutation in the living organism. It is changed into a substance which is of exceptional importance but which is not reckoned by present-day science to be among the elements. The silicon which we require in order to attract the cosmic element is transmuted. And now there must take place in the plant a real interaction between the silicic acid and the potash - but not the calcium, In order to set up this interaction we mast quicken the soil with manure. We must therefore find a plant which, by reason of the particular proportion of potash and silicon in it, is able when added in homeopathic doses, to give the manure the required power. Such a plant exists and, once again, it is a plant which always has a beneficial effect wherever it is found in our fields. It is the dandelion (Taraxacum).

The harmless yellow dandelion does untold good in any area In which it

grows, for it is the mediator between that silicic acid in minutest distribution in the cosmos and the other silicic acid actually present in the area In question. The dandelion is indeed a kind of messenger from heaven; but if it is to become active in manure, it must be applied in the right way. It must be exposed to the influences of the earth during winter. But in order to capture the forces ain the environment of the earth, this plant must be treated in the same way as the other plants with which we have dealt. Collect some yellow dandelion heads, let them wither a little, press them together, sew them into the mesentery of an ox and bury them in the ground for a whole winter. In the spring, take out the balls (they will keep until they are wanted), which will then be permeated with cosmic influences. Here also, as described before, the substance thus obtained can be added to the manure, which will then give the soil the ability to attract to Itself out of the atmosphere and the cosmos as much silicic acid as is required for the plants. The plants become sensitive to the Influences that surround them and can of themselves attract what they need. For in order to grow, plants must have a kind of sensibility. Just as I, as a man, can pass unnoticed before some dull fellow, so can everything in the soil and above it pass unnoticed before a dull plant. The plant does not sense it and cannot make use of it for Its own growth. But let the plant be permeated, however finely, with silicic acid in the way described, and it will become sensitive to its surroundings and able to attract what it needs. It is quite easy, of course, to make the plant attract what it wants from only a small distance around it. But naturally this is not good. If the soil is worked upon in the manner I have described, the plant will be prepared to draw for its needs upon a very wide area. The plant can then make use not only of what is in its own field, but also Of that which is in the soil of the neighbouring meadow or wood. It only needs to be made Inwardly sensitive in this way. So we can bring about an Interplay in Nature, by giving the plants the forces which can be transmitted to them in this way by the dandelion.

It seems to me therefore that it would be worth while trying to prepare some manure to which these five Ingredients (or their substitutes) have been added in the manner described. The manure of the future should be treated not with chemical trifles, but with common yarrow, with camomile, with nettle, with oak bark and with dandelion. Such a manure will have much of what is actually needed.

Valerian

As a final effort before using the prepared manure, take the blossoms of valerian, Valeriana offlclnalis , squeeze out the juice and dilute it with plenty of warm water (this can be done at any convenient time and the result put

on one side). If this highly diluted juice of valerian be added to manure, it can arouse in it a proper behaviour towards phosphorous substances. With these six ingredients, the most excellent manure can be obtained from either stable manure, solid or liquid, or compost.

The Energetic Activities and the Preparations

All this information can be summarised and provide the energetic activities of all the compost preparations.

Further reasons for these associations can be found in the chapter on the preparations in Gyroscopic Astrology (26)

Saturn	***Valerian***	***Phosphorus***	***Strengthens the Ego against the Astral***
Jupiter	***Dandelion***	***Hydrogen***	***Helps the Ego and the Physical entwine***
Mars	***Nettle***	***Nitrogen***	***Harmonises the Astrality and other bodies***
Venus	***Yarrow***	***Sulphur***	***Opens the Etheric to receive the Astral***
Mercury	***Chamomile***	***Oxygen***	***Strengthens the Etheric against Astral***
Moon	***Oak Bark***	***Carbon***	***Draws a rampant Etheric to the Physical***