

## LECTURE VII.

Delivered 15th July, 1924.

I propose to devote the time that remains at our disposal, to the consideration of the rearing of live-stock and the cultivation of fruit and vegetables.

Naturally there will not be time to treat the subject at very great length, but in order to obtain a fruitful starting point, we must gain insight into all the factors which come into consideration. We shall do this to-day, and tomorrow we shall pass on to the more practical aspect of the subject.

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.

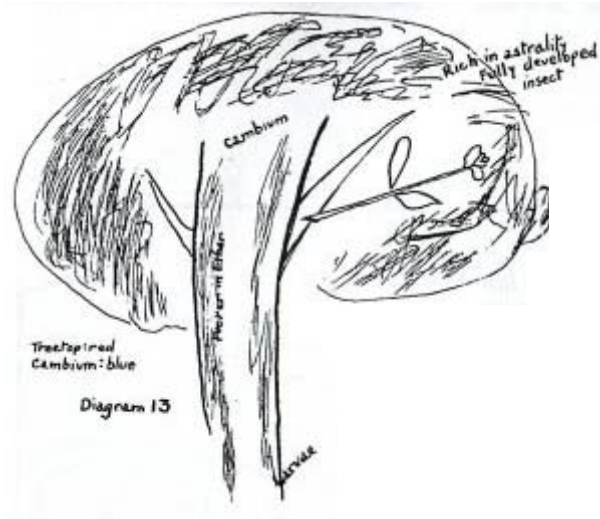
What I have drawn hypothetically is really the layer of cambium (a layer of living cells lying between the last-formed wood and the outer bark) in the tree and we cannot regard the roots of these plants otherwise than as having been replaced by the cambium. From this tissue, which is always forming new 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, as I pointed out yesterday in connection with human Karma, a spiritual element always works throughout the whole being) 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.

RS is saying the Astral insects need the more astralised nature of the soil around their roots, which is a natural result of an impoverished etheric element, for the development of their larvae. Larva are the etherically dominate stage of the insect, however they still do not want 'too much' etheric force. A too strong etheric activity must therefore discourage their development. The necessary level of astral activity, as we saw described for the beetroot nematode in lecture 6, will not be present.

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.

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 earth-worms 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.

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

Plants 'not producing seed' and thus the need to reduce forest, will come about from the overly intense shading and etheric stimulation of the forest, rather than no seeding, due to an overly strong astrality, as might be concluded from the earlier paragraphs.



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**, as I explained a few days ago from a different point of view. This is the function of lime, but it performs this function in co-operation with the world of worms and grubs.

If these ideas are carried out in more detail, they will lead to other things which, - and that is why I have expounded them with such confidence - were applied, in the days of instinctive clairvoyance, in the right way. But this instinct has been lost, rooted out by the intelligence, as have been all such instincts. Materialism is to blame for men's having become so clever and intellectual. In the days when they were not intellectual, they were not so clever, **but they were far wiser and learned through their feelings how to go about things; and we must learn to act with wisdom once again through Anthroposophy, but this time the wisdom will be conscious.** For Anthroposophy is by no means something clever and intellectual - it strives for wisdom. And we must try to draw near to wisdom in all things and not be content merely to learn by rote an abstract jingle of words, such as "Man consists of a physical body, etc." The main point is that we should introduce this knowledge into everything; then one finds the way to discriminate - especially if one really becomes clairvoyant in the sense that I have explained to you - and to see things in Nature as they really are. We shall discover, for example, that birds can become harmful if they are not in the neighbourhood of a wood of conifers which can turn what they do into something useful. Our vision is then further sharpened and we begin to discern the presence of yet another relationship. It is a very delicate relationship, similar to those I have been dealing with, but which can appear in a more tangible form. All growing things that are neither trees nor small plants, i.e. **all shrubs such as the hazel bush have an intimate relationship with mammals.** If, therefore, we wish to improve the mammals on our farm, we shall do well to plant such bush like growths. The mere presence of the bushes has a beneficent influence, for in Nature all things stand in constant reciprocal relationship.

But let us go a step further. Animals are not so foolish as human beings. They very soon notice the presence of this relationship. They find that they like these shrubs; this liking is inborn in them, and they enjoy eating them. They begin to eat what they need of the shrubs, and this has a wonderfully regulating effect upon the rest of their diet. But this insight into the intimate relations in Nature will also throw light upon the nature of harmful influences. Just as conifer woods stand in intimate relationship to birds and shrubs to mammals, **so do all kinds of fungi stand in a relation similarly intimate to the lower animals, to bacteria and the like, viz. to parasites.** Harmful parasites are closely connected with fungi. They develop where fungus-life is dispersed. In this way there arise plant diseases and other greater ills in plants. If, however, we can contrive to have not only woods, but also well-watered meadows suitably situated in the neighbourhood of cultivated lands, these will be useful in forming a good breeding ground for fungi. One should see to it that the moist meadows are well planted with such growths. We then make the following remarkable discovery, that if a meadow, not necessarily very large, but rich in fungi (e.g. mushrooms) is situated near cultivated land then the fungi, because of their kinship with bacteria and other parasites, will keep these creatures away from the farming-land. For mushrooms "hang together" with these little creatures more than do other plants. Thus in addition to the other methods I have advocated for combating plant pests there is also the possibility of keeping these tiny creatures, these vermin away from cultivated land by converting land in its vicinity into meadows.

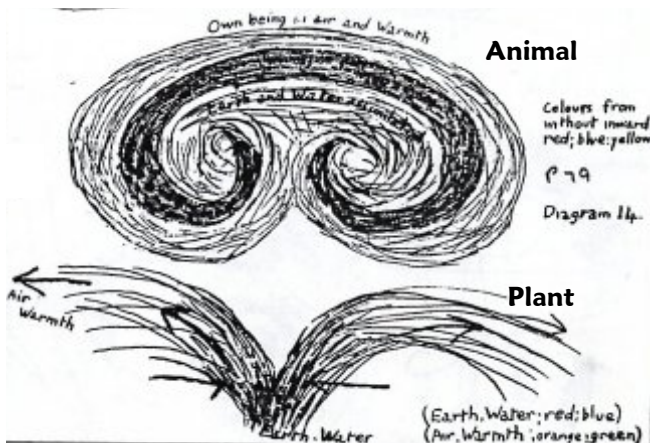
**It is so important for success in agriculture that the right amount of acreage should be assigned respectively to woods, orchards, shrubberies and meadows with a natural growth of fungi, that one often gets better results, even if one reduces the extent of tilled land accordingly.** Generally speaking, to cultivate the whole of the acreage at one's disposal, leaving no room for the other factors of which I have spoken, and to count in consequence upon larger crops is certainly no real economy. The extension of the tilled area is counterbalanced by a lowering in the quality of the produce because the in-crease in the cultivated area is made at the cost of the other factors. One

#### **Lime and the Etheric**

In lecture 5 the example of the Oak Bark preparation was given as performing this same function. Lime or Calcium Carbonate has the task of binding the World Etheric into physical matter and allowing it to be incorporated into our physical organism. Most of the lime on the planet has come from leftover bodies of living organisms. So life itself, has provided the means to bind the etheric to physical substance. It is controlled through absorption and attraction. It binds and thus reduces 'free' etheric forces.

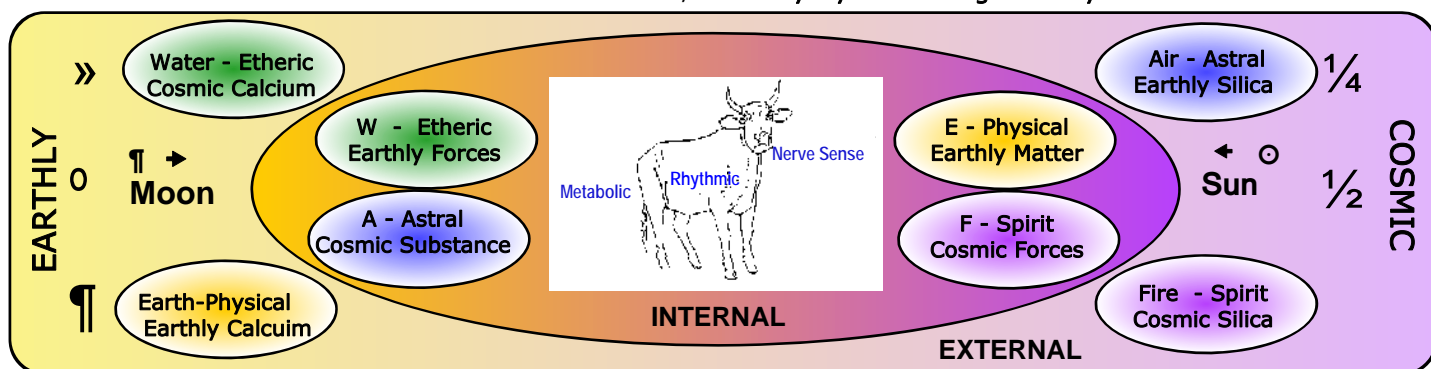
cannot be engaged in a thing like farming where Nature is the "manager", without realising the interconnections and interactions which exist between all her processes.

Now let us look at something which will make clear to us the relation of plant to animal and, conversely, of animal to plant. What is an animal in reality, and what is the plant-world? (In the case of plants it is better to speak of the whole of the plant-world). We must look for the relationship between the two because only by this means can we come to understand the feeding of animals. For feeding is only properly done if it is done in accord with the true relationship between plant and animal. What are animals? We



examine them, we even dissect them, study their muscles and nerves and admire the forms of their skeleton. But this does not tell us what an animal is in the whole economy of Nature. We shall only get at this if we grasp what it is with which the animal is most intimately connected in its environment.

Now with its system of nerves and senses and with part of its breathing system, the animal "works-up" all that which comes through the air and warmth. The animal does this to the extent that it is a separate being. (See Diag. No. 14). We may make a schematic drawing to indicate this. With regard to everything lying in its periphery, the animal lives with its nerves and sense system and part of its breathing system immediately in air and warmth. The animal has an immediate connection with air and warmth, **its bony system being actually formed from the**



warmth, which in particular mediates the influences of the sun and the moon. Its **muscular system is formed from the air**, which again works as a mediator of the forces of sun and moon. But as regards its relation to **earth and water, the animal is not able directly to assimilate. It must first absorb them into its digestive tract and then work on them with what it has itself become through air and warmth**; it works upon earth and water with its metabolic system and with a part of its breathing system, which passes over into the metabolic system. The animal must therefore have already come into existence by virtue of air and warmth if it is to be able to "work up" earth and water. This, therefore, is the animal's way of living in the sphere of earth and water. **The process of transformation which I have described takes place, of course, by means of forces (dynamically) rather than by means of substances (materially).**

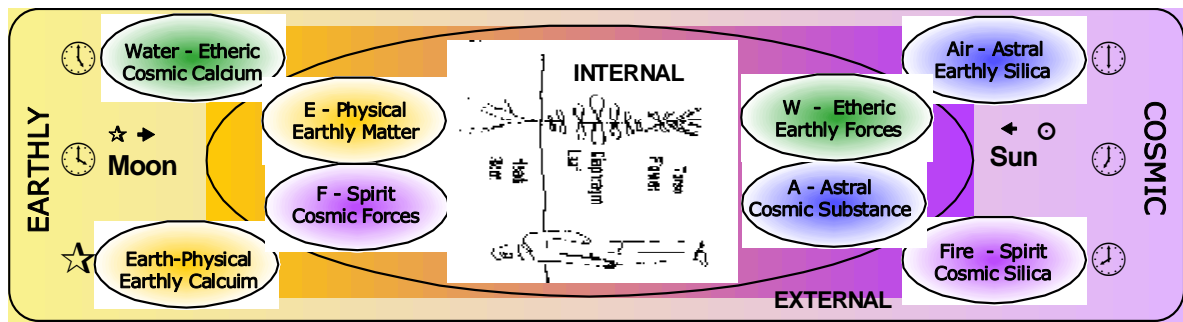
Let us now try to answer the question; What is a plant?

The plant stands in an immediate relation to earth and water just as the animal does to air and warmth. The plant, therefore, through a kind of breathing and through something very distantly resembling a sense system absorbs earth and water in the same direct manner as the animal absorbs air and warmth. Thus the plant and earth and water live directly together. And now of course, you will say: If the plant lives in

In these descriptions RS is talking of the activity of the external organisation of the four activities. Note he is talking of the elements of Air and Warmth, which form the Cosmic pole. These exist in the atmosphere as 'organs' of the World Etheric body.

Most importantly he states that this Cosmic pole is directly absorbed by animals. This point is significantly enlarged on later. The Earthly pole is absorbed through the metabolism.

These processes of assimilation are expanded on in lecture 8 but more from the point of view of the internal processes, so the arrangement of the activities is different. A clear distinction, of this duality of references, is useful to maintain throughout these lectures.



immediate contact with earth and water as the animal does with air and warmth, then no doubt the plant "works up" air and warmth inside itself just as the animal "works up" earth and water? But this is not the case. We cannot reach spiritual truths merely by analogy. **The fact is that whereas the animal absorbs earth and water into itself, the plant actually gives off the air and warmth which it experiences dimly through its connection with the soil.**

Thus air and warmth do not go into the plant, or at any rate do not enter deeply into it; instead of being devoured by the plant air and warmth are given off by it. And this process of elimination is the important thing. Organically the plant stands in inverse relation to the animal. **That which in the animal is important as a process of nutrition becomes in the plant an elimination of air and warmth,** and as in that sense we can say that the animal lives by absorbing food, in the same sense does the plant live by giving off air and warmth. And in virtue of that quality it may be said that the plant is virginal. Its character is not to absorb greedily but actually to give out that which the animal takes from the world in order to live. Thus the plant lives by giving.

In this giving and taking, we can recognise something which played a very important part in the old instinctive knowledge, of these matters. "In Nature's economy, the plant gives and the animal takes." What is contained in this saying garnered from Anthroposophy was once common property in times of instinctive clairvoyance into Nature. Even in later days, much of this knowledge has remained among those gifted with a peculiar sensitiveness in these matters, and in the works of Goethe you will sometimes come across the phrase: "In Nature everything lives through giving and taking." Goethe did not fully understand the phrase, but he adopted it from ancient customs and traditions and he felt that it pointed to something in Nature which was true. Those who came after him understood nothing of this, and so did not understand what he meant when he spoke of taking and giving. Goethe also speaks of taking and giving in connection with breathing, in so far as breathing interacts with metabolism. He uses the words "taking and giving" in a fashion, semi-clear.

To sum up, I have shown you that in a certain sense the woods, orchards and shrubberies on the earth act as regulators in producing the right kind of plant growth, and that under the soil grubs and other worm-like creatures act similarly in conjunction with lime. This is how we should envisage the relationship between the cultivation of fields, of fruit and of cattle, and then proceed to put our knowledge into practice. We shall endeavour to do this in the last hour that remains at our disposal, so that our Experimental Circle may work out these things more fully in the future.

**plant actually gives off the air and warmth**

The plant continually gives off substance through transpiration. Plants should be seen as potentiating 'machines', in that they continually draw in moisture and minerals from the soil, move them up their inner vessels in a spiraling fashion. The minerals are continually trapped and incorporated into the plant, as the vessels become finer, until the potentised water, after interacting with the leaf processes, is puffed out from the plant into the environment. This later condenses out again as dew. This dew IS part of what goes to make up the homeopathic Calcium and Silica RS refers to in earlier lectures. This 'Cosmic Substance' is again reabsorbed by the plant in the air. In this way the plant has two 'stomachs', the soil and the atmosphere. Into both it emits substance and from both it again draws 'nutrition'.

While this is all going on, we must hold the image that the Astrality is functioning in the external Air and Warmth and is enfolding this outward process of the plant. In a sense this is an image of the Astral being rejected.