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The Spirit in the Realm of Plants

by
Rudolf Steiner

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The Spirit in the Realm of Plants

A lecture given by
Rudolf Steiner
Berlin, December 8, 1910

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The following lectures were given by Rudolf Steiner to audiences familiar with the general background of his anthroposophical teaching. He constantly emphasized the distinction between his written works and reports of lectures that were given as oral communications and were not originally intended for print. It should also be remembered that certain premises were taken for granted when the words were spoken. 'These premises' Rudolf Steiner writes in his autobiography, 'include at the very least the anthroposophical knowledge of man and of the cosmos in its spiritual essence; also of what may be called anthroposophical history told as an outcome of research into the spiritual world.'

The Spirit in the Realm of Plants

Berlin, December 8, 1910

How spiritual science must recognize the living and weaving spirit in all beings surrounding us by proceeding from the principle that the knowing human being should understand himself in his knowing has been touched upon in the lectures about 'Animal Soul and Human Soul' and 'Animal Spirit and Human Spirit.'* It was said that the person knowing himself could never think of taking into his own spirit—as spiritual content—ideas, concepts, and mental images of things and beings if these concepts and ideas, this spiritual content through which the human being wants to make comprehensible what resides in the objects, were not first present in these objects, were not placed into them. All drawing forth of the spiritual from things and beings would be pure fantasy, would be a self-made fantasy, if we were not to presuppose that wherever we gaze and are able to discover the spirit, there this spirit is actually present.

Although still only in small circles, this general presupposition of the spiritual content of the world is made rather frequently. Even those who speak of the spirit in objects, however, usually remain with speaking about the spirit in general, i.e., they speak about the existence of spiritual weaving, of spiritual life lying at the basis of the mineral, plant, and animal realms, etc. To enter into the means by which the spirit individualizes itself for us, how it manifests itself particularly in this or that form of existence, is not yet given much thought in the wider circles of our educated contemporaries. Offense is usually taken to those who speak not only of the spirit generally but of its particular forms, its particular ways, how it makes itself felt behind this or that phenomenon. Nevertheless, in our spiritual science, we should not speak about the spirit in the vague and general way indicated today; rather, we should speak in such a way that we recognize how the spirit weaves behind the mineral or plant existence, how it is active in the animal and human

* Berlin, November 10 and 17, 1910

existence. Our task today is to say something about the nature of the spirit in the realm of plants.

It must be admitted that if we do not begin with abstract philosophy, or with abstract theosophy, but if we begin with unbiased observations of reality and at the same time—as it must be on the healthy ground of spiritual science—we stand firm on the ground of natural science and then want to speak about ‘the spirit in the realm of plants,’ we not only collide with unjustified prejudices of our scientists or other educated contemporaries but also come into conflict with more-or-less justified concepts that have, and must have, the power of strong suggestion.

Especially in this contemplation, which is to concern itself with the spirit that finds its expression, its physiognomy, as it were, in the realm confronting us in the gigantic trees of the primeval forest, or those growing on Teneriffa thousands of years ago, as well as in the small, unassuming violet hiding in the quiet woods or elsewhere—especially in such a contemplation a person may feel himself in a rather difficult position, if the natural scientific concepts of the nineteenth century have been absorbed. Yes, a person feels himself in a rather difficult position if he has worked through to what should be said about the spirit in this area, for how could it be denied that great and wonderful discoveries in the realm of material research—even in the realm of the nature of plants—were made in the nineteenth century, thoroughly illuminating the nature of plants from a certain standpoint.

Again and again we should be reminded that in the second third of the nineteenth century the great botanist, Schleiden, discovered the plant cell. He was the first to place before humanity the truth that every plant body is built up out of small—they are called ‘elementary organisms’—independent entities, ‘cells,’ which appear like the building blocks of this plant body. While previously plants were able to be considered only in relation to their crude parts and organs, now attention was directed to how every leaf of the higher plants consisted of innumerable, tiny microscopic formations—the plant cells. No wonder such a discovery had a powerful influence on all thinking and feeling in relation to the plant world! It is entirely natural

that the person who first discerned how the plant is built up out of these building blocks would arrive at the thought that by investigating these small formations, these building blocks, the secret of the nature of plants could be revealed.

The ingenious Gustav Theodor Fechner must already have experienced this idea when, around the middle of the nineteenth century, he actually tried to take into his thought sequences something like a 'plant soul,' although it could be said that his excessively fantastic elaboration of the nature of plants may have appeared somewhat too early. Fechner spoke comprehensively about a soul of plants (e.g., in his book *Nanna*), and he spoke not only as one who merely fantasizes but as one thoroughly and deeply acquainted with the natural scientific advances of the nineteenth century. He was unable, however, to think that plants are merely built up out of cells; rather, when he looked at the forms, the structures, of individual plants, he was led to assume that sense reality is the expression of an underlying soul element.

Now, you must admit that in contrast to what spiritual science has to say today about the life of the spirit in the realm of plants, Fechner's explanations appear rather fantastic, but his thoughts were actually an advance. In spite of this, Fechner had to experience the resistance that can come especially through the thinking into which the human spirit had penetrated by the discoveries of the nineteenth century. It must simply be understood that even the greatest individuals were fascinated by what they beheld when, under the microscope, the plant body revealed itself as a structure of small cells. They could in no way conceive how someone could still come up with the idea of a 'plant soul' after the material aspects had shown themselves in such a grandiose way to the searching human spirit. It is therefore easy to understand that even the discoverer of the plant cell became the greatest and most vehement opponent of what Fechner wished to say concerning the soul nature of plants. And it is rather interesting to see the fine and subtle mind of Fechner in battle with Schleiden, who became famous through his epoch-making discovery for botany but who did away, in a materialistically crude way, with everything that Fechner wanted

to say about plants out of his intimate contemplations.

In a battle such as the one between Fechner and Schleiden in the nineteenth century, something basically took place that must be experienced by every soul who penetrates into the science of our time, working through the doubts and riddles that arise nevertheless, especially when one enters into the achievements of natural science. He will have grave doubts if he is able to work himself out of the frequently quite compelling concepts in such a realm. Whoever is not acquainted with this compelling quality of the materialistic natural scientific concepts of the nineteenth century may find trivial, possibly even narrow-minded, what is said out of the world view that wishes to place itself on the firm ground of natural science. One who approaches matters with a healthy sense for truth and a serious concern for solving life's riddles, however, and is at the same time armed with the botanical concepts of the nineteenth century, can have quite tragic inner soul experiences. Something about this need only be suggested here.

Thus we can learn, for example, what the botany of the nineteenth century has brought. There is much in this botany that is actually magnificent and truly astounding. A person who approaches the natural scientific concepts with a healthy sense for truth reaches the point where these concepts affect him like suggestion, with a tremendous power; they do not let him loose but whisper in his ears again and again, 'You are doing something stupid if you leave the sure path on which one studies how cell relates to cell, how cell is nourished by cell,' and so on. Finally it becomes necessary to tear oneself loose from the materialistic concepts in this realm. There is no other choice, no matter how firmly one wishes to be held by the suggestive power of the world views that are merely a consequence of outer materialistic concepts. After a certain point it no longer works. Not many people today experience that point. The suggestive power is experienced by most people who feel fascinated by the natural scientific results, and they do not dare take even a single step beyond what the microscope shows. The next step is taken only by very few. It is clear, however, to whoever maintains a healthy sense for truth, especially regarding the natural sciences—and

this is necessary if one wishes to approach the spirit in the realm of plants—that first a person must occupy himself with a certain mental image, for otherwise he will always succumb to error, will always enter a labyrinth such as happened to Fechner despite his serious attempts to examine the symbolic, the physiognomic aspects of individual plant forms and structures.

I would like to suggest to you what is significant here first by means of a comparison. Imagine that someone found a piece of matter, some kind of tissue, on a path. If he examines this piece of tissue, in certain cases it may happen that he doesn't get anywhere. Why not? If this piece of tissue is a piece of bone from a human arm, the examiner will not get anywhere if he wants to look merely at this piece of bone and to explain it out of itself, for it would be impossible for this piece of tissue to come into existence without the prior existence of a human arm.

One cannot speak about the tissue at all if it is not considered in connection with a complete human organism. It is impossible, therefore, to speak about such a formation other than in connection with an entire being. Consider the following comparison. We find an object somewhere, a human hair. If we wanted to explain how it may have originated there, we would be led completely astray, because we can explain this only by considering it in connection with an entire human organism. By itself it is nothing, by itself it cannot be explained.

This is something that the spiritual investigator must consider in relation to the whole scope of our observations, of our explanations. He must direct his attention to the question of whether any object confronting him can be considered by itself or whether it remains inexplicable by itself, whether it belongs to something else or can be examined better as an isolated entity.

Curiously enough, the spiritual investigator becomes aware that it is generally impossible to consider the world of plants, this wonderful covering of the earth, as something existing by itself. When confronted with the plant he feels just as he does regarding a finger, which he can consider only as belonging to a complete human organism. The plant world cannot be considered in isolation, because to the view of the

spiritual investigator the plant world at once relates itself to the entire planet earth and forms a whole with the earth, just as the finger or piece of bone or the brain forms a whole with our organism. And whoever merely looks at plants by themselves, remaining with the particular, does the same as one who wishes to explain a hand or a piece of human bone by itself. The common nature of plants simply cannot be considered in any other way than as a member of our common planet earth.

Here, however, we come to a matter that may annoy many today, though it is valid nevertheless for the spiritual scientific view. We come to look differently at our whole planet earth than is done customarily by today's science, for our contemporary science—be it astronomy, geology, or mineralogy—basically speaks about the earth only in so far as this earthly sphere consists of rocks, of the mineral element, of lifeless matter. Spiritual science may not speak in this way. It can only speak in such a way that everything found on our earth—that which a being coming from outer space, as it were, would find in human beings, animals, plants, and stones—belongs to the whole of our earth, just as the stones themselves belong to our earth. This means that we may not look at the earth planet as a dead rock formation but rather as something that is in itself a living whole, bringing forth the nature of plants out of itself, just as the human being brings forth the structures of his skin, of his sense organs, and the like. In other words, we may not consider the earth without the plant covering that belongs to it.

An outer circumstance might already suggest to us that, just as every stone has a certain relationship to the earth, so also everything plant-like belongs to it. Just as every stone, every lifeless body, shows its relationship to the earth by being able to fall onto the earth, where it finds a resistance, so every plant shows its relationship to the earth by the direction of its stem, which is always such that it passes through the center of the earth. All stems of plants would cross at the earth's center if we extended them to that point. This means that the earth is able to draw out of its center all those force radiations that allow the plants to arise. If we look at the mineral realm without also adding the plant covering, we are looking only at

an abstraction, at something thought out. We must also add that the natural science that proceeds purely out of the outer material likes to speak about how the origins of all life—including plant-life—must lie in the lifeless, the mineral element.

This issue does not exist at all for the spiritual investigator, because the lower is never a precondition for the higher; rather the higher, the living, is always the precondition for the lower, the nonliving. We will see later, in the lecture, 'What Does Geology Have to Say About the Origin of the World,'* that spiritual research shows how everything rock-like, mineral—from granite to the crumb of soil in the field—originated in a manner similar to what natural science says today about the origin of coal. Today coal is a mineral, we dig it out of the earth. What was it millions of years ago according to natural scientific concepts? Extensive, mighty forests—so says natural science—covered large portions of the earth's surface at that time; later they sank into the earth during shifts of the earth's crust and were then transformed chemically in regard to their material composition, and what we dig up today out of the depths of the earth are the plants that have become stone. If this is admitted today in relation to coal, it should not be considered too ridiculous if spiritual science, by its methods, comes to the conclusion that all rocks found on our earth have in the final analysis originated from the plant. The plant first had to become stone, as it were. Thus the mineral is not the precondition for the plant-like, but rather the reverse is the case, the plant-like is the precondition for the mineral. Everything of a mineral nature is first something plant-like that hardens and then turns to stone.

Thus in the earth planet we have something before us concerning which we must presuppose the following: it was once, with respect to its densest quality, of a plant nature, was a structure of plant-like being, and only developed the lifeless out of what was living, progressively hardening, turning to wood, turning to stone. Just as our skeleton first separates itself out of the organism, so we have to look at the earth's rock formations

* Berlin, February 9, 1911.

as the great skeleton of the earth being, of the earth organism.

Now, if we are able to consider this earth organism from a spiritual scientific viewpoint, we can go still further. Today I can give only the first outlines of this, because this is a cycle of lectures in which one thing must lead to the next. We can ask ourselves, what is the situation with the earth organism as such?

In studying an organism we know that alternations of different conditions are revealed. The human and animal organisms reveal a waking and a sleeping condition alternating in time. Can we, from a spiritual scientific viewpoint, find something similar regarding the body of the earth, the earth organism? To outer consideration, what follows may appear to be a mere comparison, but for spiritual research it is not a comparison but a fact. If we study the curious lawfulness of summer and winter, how it is summer on one half of the earth and winter on the other half, how this relationship alternates, and if we pay attention to how this lawfulness—as wintertime and summertime—is to be discerned in relation to all earthly life, then it will no longer appear absurd if spiritual science tells us that winter and summer in the earth organism correspond to waking and sleeping in the organisms around us. It is simply that the earth does not sleep in time in the same way as other organisms but is always awake somewhere and always asleep at some other portion of its being. Waking and sleeping move around spatially: the earth sleeps in the part where there is summer, and it is awake in the part of its being where there is winter. Thus the whole earth organism confronts us spiritually with conditions like waking and sleeping in other organisms.

The summer condition of the earth organism consists of a very specific relationship of the earth to the sun, and because we are dealing with a living, spirit-filled organism we may say that it surrenders itself to an activity that proceeds spiritually from the sun. In the winter condition the earth organism closes itself off from this sun activity, drawing itself together into itself. Now let us compare this condition with human sleep. I will now speak of what appears to be a mere analogy; spiritual science, however, provides the evidence for these observations.

If we study the human being in the evening, when he

is tired, as his consciousness is diminishing, we find that all thoughts and feelings that enter our soul during the day from the outside, all pleasure and suffering, joy and pain, sink into an indefinite darkness. During this time, the human spirit being—as we have shown in the lecture about the nature of sleep *—passes out of the human physical body and enters the spiritual world, surrendering itself to the spiritual world. In this sleep condition it is a curious fact that the human being becomes unconscious. For the spiritual investigator (we will see how he comes to know this) it is revealed that the inner aspect of the human being, the astral body and ego, actually draw themselves out of the physical and etheric bodies, but they do not simply draw themselves out and float over him like a cloud formation; rather this whole inner aspect of the human being spreads itself out, pours itself out over the whole planetary world around us. As incredible as it may seem, it is nevertheless revealed that the human soul pours itself out in a unified way over the astral realm. The investigators who were acquainted with this realm knew well why they called what departs from the physical the ‘astral body.’ The reason was that this inner element draws out of heavenly space, with which it forms a unity, the forces it needs in order to replace what the day’s efforts and work used up from the physical body. Thus the human being in sleep passes into the great world and in the morning draws himself back within the limits of his skin, into the small human world, into the microcosm. There, because his body offers him resistance, he again feels his ego, his self-consciousness.

This breathing out and breathing in of the soul is a wonderful alternation in human life. Of all those who have not spoken directly from an occult, spiritual scientific point of view, I have actually found only one individual who made so fitting a remark about the alternation of waking and sleeping that it can be taken directly over into spiritual science, because it corresponds with spiritual scientific facts. It was a thoroughly mathematical thinker, a deeply thoughtful man, who was able to encompass nature magnificently with his spirit: Novalis. He says

* Berlin, November 24, 1910.

in his *Fragments*:

Sleep is a mixed condition of body and soul. In sleep, body and soul are chemically united. In sleep the soul is evenly distributed throughout the body—the human being is neutralized. Waking is a divided, a polar condition; in waking the soul is pointed, localized. Sleep is soul-digestion; the body digests the soul (removal of the soul stimulus). Waking is the condition of the soul stimulus influence: the body partakes of the soul. In sleep the bonds of this system are loosened; in waking they are tightened.

Thus sleep for Novalis means the digestion of the soul by the body. Novalis is always conscious that in sleep the soul becomes one with the universe and is digested, so that the human being can be further helped in the physical world.

With respect to his inner being, then, the human being alternates in such a way that in the daytime he draws himself together into the small world, into the limits of his skin, and then expands into the great world during the night, drawing forth through surrender forces from that world in which he is then imbedded. We will not understand the human being unless we understand him as formed out of the entire macrocosm.

For that part of the earth where it is summer, there is something similar to what goes on in the human being in the condition of sleep. The earth gives itself to everything that comes down from the sun and forms itself as it should form itself under the influence of the sun activity. In that part of the earth where it is winter, it closes itself off from the influence of the sun, lives within itself. There it is the same as when the human being has drawn together into the small, inner world, living in himself, while for the part of the earth where it is summer it is the same as when the human being is surrendered to the whole outer world.

There is a law in the spiritual world: if we direct our attention to spiritual entities far removed from one another—such as, for example, the human being here on one side and the earth organism on the other—the states of consciousness must be

pictured as reversed in a certain sense. With the human being, stepping out into the great world is the sleep condition. For the earth, the summer (which one would be inclined to consider a waking condition) is something that can only be compared with the human being falling asleep. The human being steps out into the great world when he falls asleep; in summer the earth with all its forces enters the realm of sun activity, only we must be able to think of the earth and the sun as spirit-filled organisms.

In wintertime, when the earth rests within itself, we must be able to think of its condition as corresponding to the waking condition of the human being, although it may be tempting to consider winter as the earth's sleep. When we consider entities as different from one another as the human being and the earth, however, the states of consciousness appear reversed in a certain way. Now, what does the earth accomplish when it is under the influence of surrender to the sun being, to the sun spirit? To have an easier comparison, we would do well to turn the concepts around now. The earth's surrender to the sun being is simply something that may be compared spiritually with the condition of the human being when he awakens in the morning and emerges out of the dark womb of existence, out of the night, into his joys and sorrows. When the earth enters the realm of sun activity—although this could be compared with the sleep condition of the human being—all the forces that sprout forth from the earth allow the resting winter condition of the earth to pass over into the active, the living, summer condition.

What, then, are the plants in this whole web of existence? We could say that when spring approaches, the earth organism begins to think and to feel, because the sun with its being lures out the thoughts and feelings. The plants are nothing but a kind of sense organ for the earth organism, awakening anew every spring, so that the earth organism with its thinking and feeling can be in the realm of the sun activity. Just as in the human organism light creates the eye for itself in order to be able to manifest through the eye as 'light,' so every spring the sun organism creates for itself the plant covering in order to look at itself, to feel, to sense, to think by means of this plant covering. The plants cannot directly be considered the

thoughts of the earth, but they are the organs through which the awakening organization of the earth in spring, together with the sun, develops its thoughts and feelings. Just as we can see our nerves emanating from the brain, developing our feeling and conceptual life through the eyes and ears together with the nerves, so the spiritual investigator sees in what transpires between earth and sun with the help of the plants the marvelous weaving of a cosmic world of thoughts, feelings, and sensations. The spiritual investigator finds that the earth is surrounded not merely by the mineral air of the earth, by the purely physical earth atmosphere, but by an aura of thoughts and feelings. For spiritual research the earth is a spiritual being whose thoughts and feelings awaken every spring, and throughout the summer they pass through the soul of our entire earth.

The plant world, however, which is a part of our entire earth organism, provides the organs through which our earth can think and feel. Woven into the spirit of the earth are the plants, just as our eyes and ears are woven into the activities of our spirit.

In spring a living, spirit-filled organism awakens, and in the plants we can see something that is pushed out of the countenance of our earth in some realm where it wants to begin to feel and think. Just as everything in the human being tends toward a self-conscious ego, so it is also in the realm of plants. The whole plant world belongs to the earth. I have already said that a person would be close to insanity if he did not think of how all feelings, sensations, and mental images are directed toward our ego. Similarly, everything the plants mediate during summertime is directed toward the earth's center, which is the earth ego. This should not be said merely symbolically! As the human being has his ego, so the earth has its self-conscious ego. That is why all plants strive toward the earth's center. That is why we may not consider plants by themselves but rather must consider them in interaction with the self-conscious ego of the earth. What unfolds itself as thoughts and sensations of the earth is similar to the thoughts and sensations that live in us, similar to whatever arises and disappears in us during our waking state, what lives in us astrally, if we speak from the viewpoint of

spiritual science.

Thus we cannot picture the earth only as a physical structure, for the physical structure is for us something like our own physical body, which can be seen with the outer eyes and touched with the hands, and which is observed by outer science. This is the earth body that present-day astronomy or geology studies. Then we have to direct our attention to what in the human being we have come to know as the etheric body or life body. The earth also has such an etheric body, and it also has an astral body. This is what awakens every spring as the thoughts and feelings of the earth, which recede when winter approaches so that the earth rests in its own ego, closed off within itself, retaining only what it needs in order, through memory, to carry over the preceding into the following, retaining in the plant's seed forces what it has conquered for itself. Just as the human being, when he falls asleep, does not lose his thoughts and sensations but finds them again the next morning, so the earth, awakening again from sleep in the spring, finds the seed forces of the plants in order to permit what has been conquered in an earlier time to emerge again from the living memory of the seed forces.

When regarded in this way, the plants can be compared with our eyes and ears. What our senses are for us, the plants are for the earth organism. But what perceives, what achieves consciousness, is the spiritual world streaming down from the sun to the earth. This spiritual world would not be able to achieve consciousness if it did not have its sense organs in the plants, mediating a self-consciousness just as our eyes and ears and nerves mediate our self-consciousness. This makes us aware that we speak correctly only if we say that those beings who stream from the sun down to the earth, unfolding their spiritual activity, encounter from spring through summertime the being that belongs to the earth itself. In this exchange the organs are formed through which the earth perceives those beings, for the plants do not perceive. It is a superstition, shared also by natural science, when it is said that the plant perceives. The spiritual entities that belong to the earth activity and the sun activity perceive through the plant organs, and these entities direct

toward the center of the earth all organs they need in order to unite them with the center of the earth. Thus what we have to see behind the plant covering are the spiritual entities that weave around the earth and have their organs in the plants.

It is remarkable that in our time natural science is actually moving toward a recognition of such spiritual scientific findings, for it is nothing less than full recognition of the situation to say that our physical earth is only a part of the whole earth, that the gaseous sun ball is only a part of the whole sun, and that our sun, as it appears to us physically, is only a part of the soul-spiritual entities who interact with the soul-spiritual entities of the earth. Just as the human world is connected with its environment, and just as human beings have their organs in order to live and to develop themselves, so these entities, which are real, create for themselves in the plant covering an organ in order to perceive themselves. As I said, it is superstitious to believe that the plant as such perceives or that the single plant has a kind of soul. This is just as superstitious as speaking of the soul of an eye. Although a remarkable linking of facts, self-evident to spiritual science, impelled outer science throughout the nineteenth century to recognize what has just been said, it is nevertheless a fact that outer science does not know its way around very well in this realm; this is still so today, for what science has brought together so far about the sense life of plants completely supports what I have just said about the spirit and its activity in the realm of plants, but in outer science it cannot be comprehended as such. We can see this in the following example. In 1804 Sydenham Edward discovered the unusual plant called the Venus fly-trap, which has bristles on its leaves. When an insect comes near this plant so that contact with the bristles occurs, the insect is trapped by the leaf and then seemingly devoured and digested. It was remarkable when man discovered that plants can eat, can even take in animals, are meat eaters! But it was not known quite what to do with this, and this is interesting, because this discovery has repeatedly been forgotten and then rediscovered, in 1818 by Nuttal, in 1834 by Curtis, in 1848 by Lindley, and in 1859 by Oudemans. Five people in succession discovered the same thing! And science could not

do much more with this discovery than for Schleiden, who made such a contribution to research of the plant world, to say that one should be on guard and not succumb to all kinds of mystical speculations attributing a soul to plants! Today, however, science is again prepared to attribute a soul to the individual plant, for example the Venus flytrap. This would be as superstitious as attributing a soul to the eye, however. Especially people such as Raoul France, for example, have immediately interpreted these things in an outer sense, saying, 'There the soul element is evident, manifesting in a way analogous to the soul element of the animal!'

This shows how necessary it is, especially in the realm of spiritual science, not to succumb to all kinds of fantasies, for here outer science has succumbed to the fantasy that by attributing a soul nature to the Venus fly-trap, it can be thrown together with the human or animal soul nature. If this is done, a soul should also be attributed to other entities that attract small animals and, when these animals have come near, surround them with their tentacles so that they remain caught within. If one speaks of a soul in the Venus fly-trap, a soul can also be attributed to a mouse trap! We should not speak like this, however. As soon as there is the wish to penetrate into the spirit, things must be understood accurately and exactly, and one must not conclude from apparently similar outer qualities that the inner qualities work in the same way.

I have already directed attention to the fact that some animals exhibit something similar to memory. When an elephant is led to the drinking trough and on the way there someone irritates him, it can happen that when the elephant returns he has retained water in his trunk and sprays the person who irritated him earlier. It is said that here we can see that the elephant has a memory, that he remembered the person who irritated him and resolved: 'On the way back I will spray him with water!' But this is not the case. With the soul life it is important for us to follow the inner process exactly and not immediately to speak of memory when a later event occurs as an effect of an earlier cause. Only when a being truly looks back to something that took place at an earlier time do we have to do

with memory; in every other case we are dealing only with cause and effect. This means that we would have to look exactly into the structure of the elephant's soul if we wished to see how the stimulus applied results in something that calls forth an effect after a certain time.

Therefore we must not interpret things such as what we encounter in the Venus fly-trap by thinking that the entire arrangement of the plant is there in order to determine an inner soul nature of the plant, but rather that what goes on there is brought about from outside. The plant serves as organ of the entire earth organism even in such a case. How the plants on the one hand pertain to the ego of the earth and on the other hand to the aura of the earth—the astral body, the earth's world of sensations and feelings—was shown particularly by this research in the nineteenth century. One can actually be grateful to those natural scientists—such as Gottlieb Haberlandt—who simply presented the facts they discovered in their research, and did not—like Raoul France or others—draw from these results purely outer conclusions. If the natural scientist were to present things as they really are, then one could be grateful to him; if he draws from them conclusions regarding the soul life of a single plant, however, then he should also immediately conclude something about the soul life of the single hair or tooth.

If we now study grain-producing plants, we discover remarkable little organs present in all these plants. Small structures in the starch cells are discovered. These cells are constructed in quite a remarkable way, so that within them there is something like a loose kernel. These structures have the unique property that the cell wall remains insensitive to the kernel at only one spot. If the kernel slips to another spot, it touches the cell wall, leading the plant to return to its earlier position. Such starch cells are found in all plants whose main orientation is toward the center of the earth, so that the plant has an organ within that always makes it possible for it to direct itself in its main orientation toward the center of the earth. This discovery, made during the nineteenth century by various scientists, is certainly wonderful, and it is most remarkable if it is simply presented as it is. Even if Haberlandt, for example,

believes that this is a matter of a kind of sense perception by plants, he nevertheless presents the facts so clearly that one must be especially grateful for his dry and sober presentation.

But now let us turn to something else. If the leaf of a plant is studied, it is discovered that the outer surface is actually always a composite of many small, lens-like structures, similar to the lens in our eye. These 'lenses' are arranged in such a way that the light is effective only if it falls onto the surface of the leaf from a very specific direction. If it falls from another direction, the leaf instinctively begins to turn in such a way that the light can fall into the center of the lens, because when it falls to the side it works in another way. Thus there are organs for light on the surface of the leaves of plants. These light organs, which actually can be compared with a kind of eye, are spread out over the plants, but the plant does not see by means of them; rather the sun being looks through them to the earth being. These light organs bring it about that the leaves of the plant always have the tendency to place themselves perpendicularly to the sunlight.

In this—in the way the plant surrenders itself to the sun's activity in spring and summertime—we have the plant's second main orientation. The first orientation is that of the stem, through which the plants reveal themselves as belonging to the earth's self-consciousness; the second orientation is the one through which the plants express the earth's surrender to the activity of the sun beings.

If we now wished to go still further, we would have to find, if the previous considerations are correct, that through this surrender of the earth to the sun, the plants somehow express how the earth, through what it brings forth, really lives in the great macrocosm. We would have to perceive something in the plants, so to speak, which would indicate to us that something works into the plant world that is brought about outside especially by the sun being. Linnaeus pointed out that certain plants open their blossoms at 5 a.m. and at no other time. This means that the earth surrenders itself to the sun, which is expressed in the fact that certain plants are able to open their blossoms only at very specific times of the day; for example,

Hemerocallis fulva, the day lily, blossoms only at 5 a.m.; *Nymphaea alba*, the water lily, only at 7 a.m., and *Calendula*, the marigold, only at 9 a.m. In this way we see a marvelous expression of the earth's relationship to the sun, a relationship that Linnaeus termed the 'sun clock.' The plant's falling asleep, the folding together of the petals, is also limited to very specific times of the day. A wonderful lawfulness and regularity is evident in the life of plants.

All of this shows us how the earth is surrendered—like the human being in sleep—to the great world, living within it. Just as it allows the plants to bloom and wilt, it shows us the spiritual weaving between sun and earth. Looking at matters in this way, however, we would have to say that we gaze there into deep, deep mysteries of our environment. For the serious seeker after truth, this puts a stop to the possibility—regardless of how fascinating the results of purely material research are—to think of the sun merely as a ball of gas racing through space; it puts a stop to the possibility that the earth can be considered as it is by astronomy and geology today. There are compelling reasons that must lead the conscientious natural scientist to admit the following: 'In what natural science reveals, you may no longer see anything but an expression of the spiritual life lying at the foundation of everything!' Then we regard the plants as a physiognomic expression of the earth, as the expression of the features of our earth. Thus what we call our aesthetic feeling in relation to the plant world deepens especially through spiritual science. We stand before the gigantic trees in the primeval forest, before the quiet violet or lily of the valley, and we look at them as single individualities, yes, but in such a way that we say, there the spirit that lives throughout space expresses itself to us—sun spirit! earth spirit! Just as we recognize in a human being the piety or impiety of his soul, so we can come to an impression, from what looks at us out of the plants, of what lives as earth spirit, as sun spirit, of how they battle with one another or are in harmony. There we feel ourselves as living and weaving within the spirit.

Just as an illustration of how spiritual science can be verified by the natural science of the nineteenth century, I will

relate to you the following. Listeners who have heard lectures here in the past will recall how I have indicated that there are plants in the earthly world that are misplaced, that do not belong in our world. One such plant is mistletoe, which plays such a remarkable role in legends and myths, because it belongs to an earlier planetary condition of our earth and has remained behind as a remnant of a pre-earthly evolution. This is why it cannot grow on the earth but must take root in other plants. Natural science shows us that mistletoe does not have those curious starch cells that orient the plant toward the center of the earth. I could now begin briefly to take apart the entire botany of the nineteenth century bit by bit, and you will find little by little how the plant covering of our earth is the sense organ through which earth spirit and sun spirit behold each other.

If we pay heed to this, we receive a science—as seems appropriate for the plant world that we love and that gives us so much joy—a science that can at the same time raise our soul, bring it close to this plant world. With our soul and spirit we feel ourselves belonging to the earth and to the sun; we feel as if we had to look up to the plant world, as it were, we feel that it belongs to our great mother earth. We must do this. Everything that as animal or human being seems to be independent of the immediate effect of the sun is actually, through the plant world and its dependence on the plant world, indirectly dependent on the sun. The human being does not undergo the kinds of transformations that plants go through in winter and summer, but it is the plant that gives him the possibility of having such a constancy within himself. The substances that the plant develops can be developed only under the influence of the sun, through the interrelationship of sun spirit and earth spirit. The carbohydrates can arise only if the sun spirit and the earth spirit kiss through the plant being. The substances developed here yield what the higher organisms must take into themselves in order to develop warmth. The higher organisms can only thrive through the warmth developed by taking up the substances prepared by the sun via the plants.

Thus we must look to mother earth as to our great nourishing mother. We have seen, however, that in the plant

covering we have the physiognomy of the plant spirit, and through this we feel as though standing in soul and spirit. We gaze, as it were—just as we gaze into the eyes of another person— into the soul of the earth, if we understand how it manifests its soul in the blossoms and leaves of the plant world.

This is what led Goethe to occupy himself with the plant world, which led him to an activity that consisted fundamentally of showing how the spirit is active in the plant world and how in the plant the leaf is formed out of the spirit in the most diverse forms. Goethe was delighted that the spirit in the plant forms the leaves, rounds them, and also leads them to wind around the stem. And it was remarkable when a man who truly recognized the spirit—Schiller, who met Goethe after a botanical lecture in Jena—when Schiller, who was not satisfied by the lecture, said, “That was just an observation of plants as they are in isolation!” whereupon Goethe took out a sheet of paper and sketched in his way, with a few lines, how for him the spirit is active in the plant. Schiller, who was unable to understand such a concrete presentation of the spirit of the plant, said in reply, “What you are drawing there is only an idea!” to which Goethe could only say, “Isn’t it nice that I can have ideas without knowing it and can even see them with my own eyes!”

Especially in the way in which a man like Goethe studied the plant world on his journey over the Brenner—when he looked at the coltsfoot with completely different eyes—the way in which he saw in this how the spirit is active on the earth and forms the leaves, shows us how we can speak of a common spirit of the earth that brings itself to expression only in the manifold plant being as in his own special organ. What is physical is spirit; we simply have the task of pursuing the spirit always in the right way. Whoever pursues the plant as it grows out of the common spirit of the earth will find the earth spirit that Goethe already had in view when he let his Faust address the spirit active in the earth, who says of himself:

*In Lebensfluten, in Tatensturm
Wall’ ich auf and ab,
Webe hin and her!*

*Geburt and Grab,
Ein ewiges Meer,
Ein wechselnd Weben,
Ein gluhend Leben,
So Schaff ich am sausenden Webstuhl der Zeit
Und wirke der Gottheit lebendiges Kleid.*

In the tides of life, in action's storm,
Up and down I wave,
To and fro weave free,
Birth and the grave,
An infinite sea,
A varied weaving,
A radiant living,
Thus at Time's humming loom it's my hand that prepares
The robe ever-living the Deity wears.

The person who beholds in this way the spirit in the plant life of the earth feels himself strengthened by seeing what he must consider his inner being poured out over the whole environment he is allowed to inhabit. And he must say to himself, "If I study what encircles my space, I find it confirmed that the origin of all things is to be found in the domain of the spirit." And an expression of the relationship of human spirit and human soul, and also the relationship of plant soul and plant spirit, we can encompass in these words:

*Die Dinge in den Raumesweiten,
Sie wandeln sich im Zeitenlauf.
Erkennend lebt die Menschenseele
Durch Raumesweiten unbegrenzt
Und unversehrt durch Zeitenlauf.
Sie findet in dem Geistgebiet
Des eignen Wesens tiefsten Grund.*

To the sense of man there speak
The things in breadths of space
Transforming themselves in course of time.

Knowing lives the human soul
Unbounded by the breadths of space,
Unaltered by the course of time;
It finds in the realm of spirit
Its own being's deepest ground!