

BIO-DYNAMIC FARMING AND GARDENING
AN INTRODUCTION TO RUDOLF STEINER'S APPROACH TO AGRICULTURE

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RUDOLF STEINER, Austrian scientist and thinker, is known as the founder of "Anthroposophy" and its many practical applications, among which are the "bio-dynamic" methods of farming and gardening. He was born in 1861 in Kraljevec (then belonging to Austria-Hungary) and educated in and near Vienna. His scientific training he received at the University of Technology in Vienna, his main interest being the natural sciences and mathematics. To the country surroundings of his early youth he owed his knowledge of farming and industry which was later on to enable him to give remarkable suggestions for the renewal of farming and gardening! On the basis of a deeper insight into the forces operating in living nature. The last 12 years of his life he devoted almost entirely to the building up of the School of Spiritual Science in Dornach, Switzerland, known as the Goetheanum and a centre of artistic and scientific activities. He died in 1925. surrounded by a large number of followers from all countries, who try to carry further the numerous suggestions which he left to their care in many fields of knowledge and practice.

His specific contribution to farming and gardening cannot be understood without reference to his native gifts of direct insight into the subtle interplay of invisible forces in the visible world. For him, the "life body" which underlies the material forms of plants, animals and man was perceptible as "penetrating the physical body" and acting as its architect and continuous rebuilders. The plant lives in a continuous stream of changing substances taken in and given off again, which make the shape outwardly visible as they pass through it. What persists in the metabolism is not the matter itself but the "formative forces" which rule it. They maintain the shape in spite of the metabolism. The life body (also called the formative forces body) builds the bridge between the different visible stages of the plant and connects them into a unity. But it also links the plant with the formative forces in the soil and the atmospheric surroundings, and even with the extra-terrestrial agents of which the sun is the most obvious representative. The whole plant world and the living soil are thus embedded in an invisible system comprising the sun, which in itself forms a huge organism. Things permeated with life do not stand in a state of separation one beside the other as lifeless things do, but bear about with them an invisible system of forces which connects them with all other living beings. Thus they interpenetrate each other, and their physical outline does not represent their limits. They project beyond it. It is for concrete research to find out with what each plant species is linked up: it may be other plant species, or substances in the ground or atmosphere, even though found at remarkable distances. Similar "dynamic relations also link the plant world with the living forces operating in animals and men. This was the picture which presented itself to the experience of Rudolf Steiner from earliest youth.

CONCEPT OF NATURE

His view of nature bears a certain resemblance to the ideas held by Goethe (1749-1832), but those ideas are restated in terms of modern thought, and made accessible to

experimentation. The striking thing for the student of Rudolf Steiner's writings is that he was able to speak authoritatively about a great number of fields of knowledge as though by direct acquaintance with the matter in hand. The conception of the world as a whole which is prior to the part, and must be considered if the parts are to be understood is common to both Goethe and Steiner. The difference lies in the enormous amount of concrete information which Steiner provided to fill in the overall picture. These details are drawn from native observation, while his vast erudition provided him with corroborating material from contemporary science and literature. It is the details which give to his indications that astounding bearing on practice that has again and again filled experts and experimenters with wonder.

The reports of the Dornach Laboratories (Switzerland) contain a large amount of material which has become important for practical procedures. We mention only the research work of Lilly Kolisko and Ehrenfried Pfeiffer. Pfeiffer has also summed up his vast practical experience in his books, *Bio-Dynamic Farming and Gardening* (1940) and *The Earth's Face and Human Destiny* (1947).

NATURE OF THE EARTH

Steiner's conception of the earth as a whole can be confirmed with ordinary physical methods of research. In studying, for instance, the changes of temperature in the atmosphere, one finds the well-known regular change during day and night. But the atmospheric pressure does not follow this simple rhythm as one would expect; it changes regularly twice a day, attaining a minimum at three o'clock in the afternoon and a second minimum at three o'clock at night. All properties of the atmosphere—electric tension, ionization, etc.—show the same regular change, which reveals that they are the manifestations of a life process that comprises the whole of the earth and makes it a separate cosmic entity. Günther Wachsmuth, the first naturalist to follow in this an indication by Rudolf Steiner, drew attention to the remarkable unity embracing the earth, and spoke of a breathing process which involves the whole earth organism. Wachsmuth has extended his research so as to include the remotest strata of the atmosphere, and has built a bridge to the meteorological and cosmological research work of our day. See his comprehensive book *Erde und Mensch* (Zurich, 1945).

One can easily see that Steiner's contribution is by no means a matter of mere theory, but changes the whole attitude of the practical farmer towards his tasks. Nobody who begins to understand that the earth is an organism which lives within the regular interplay of the forces and substances of its surroundings can fail to regard the soil as a particular part of this organism, as an organ of the earth, so to speak. True, this organ is permeated with mineral matter and the processes which hold sway in it. But there is a continuous stream of living forces to be found in the soil and this counteracts the forces which tend towards mineralization. The process in the soil must be understood as an interplay of two opposing tendencies: vitalization and mineralization. Every substance, whether mineral or alive, solid or liquid or gaseous, comes within reach of this interplay. Even air, light, and warmth become different after entering the soil. What is needed is an exact knowledge of what all these substances are doing inside the earth and what their function is when they emerge above the

surface. There can be no conscious and responsible handling of anything in the realm of farming without this exact knowledge of "bio-dynamic conditions.

BIO-DYNAMIC METHOD

Bio-dynamic research inquires into these riddles in close co-operation with the practical farmer and gardener. It is, therefore, not only interested in the question of better manuring and fertilising, but comprises a large body of information about the interplay of forces on the earth, within and around it.

The bio-dynamic methods" originally arose from answers given by Rudolf Steiner when farmers in Germany and Austria asked his advice for the improvement of soil and crops. The first comprehensive information was embodied in a course of lectures given by him to farmers at Koberwitz, in Silesia, June 1924. The facts pointed out in this course, and widely followed up later in practice, cannot in any sense be directly compared with the suggestions put forward by the adherents or opponents of certain methods of fertilising. They are not mere material in the battle for or against artificial fertilisers, but far more comprehensive procedures with the aim of re-establishing natural conditions in farm and garden. The biodynamic methods comprise a great many steps which start from the careful consideration of the complicated interplay below and above the soil. Rudolf Steiner's point is that the farmer or gardener should be led to the understanding of the realm of life which he has concretely to deal with. Modern farming has lost the instinctive wisdom which in former centuries guided husbandry. Rudolf Steiner, from his concrete knowledge of this subtle interplay, helps the farmer and gardener to devise a practical plan for the improvement of soil and crop, for the establishment of healthy livestock, the cultivation of trees and shrubs and hedges, the fostering of birds and bees, and butterflies, and even of the earthworm.

Great progress has been made recently in devising laboratory methods to prove that "formative forces" are present in organic matter, the most efficient method employing the so-called sensitive crystallisations developed by Ehrenfried Pfeiffer following indications of Rudolf Steiner. A salt solution, preferably copper chloride, is left standing overnight on the plain surface bottom of a glass dish, protected from outside disturbance. It appears that the resulting thin layer of needle-shaped crystals show a characteristic arrangement of its elements. If a drop of an organic fluid is added before the crystallising begins, the pattern appears modified, so much so that Pfeiffer was able to draw conclusions concerning the nature of the fluid added from mere inspection of the crystal pattern. Students of the method can grow familiar with these patterns and use the method themselves for testing various fluids: for instance, plant juices or blood, or an extract from the soil or from various manures and composts. With sufficient practical experience --the method is teachable--a safe diagnosis can be made about the properties of soil, the health of plants, and the organic conditions of animals and human beings. In recent years, due to the growing interest among medical men, the method has proved of value for the diagnosis of various diseases. There can be no doubt that it has proved invaluable as a source of advice for practical farming and gardening when it is applied to soil testing and crop evaluation.

B.D. PRODUCTION OF HUMUS

A few remarks may be added about Rudolf Steiner's specific advice concerning the "bio-dynamic production of humus. In recent decades the soil has not been regarded as an organ containing and providing life forces, but merely as a substratum which has to transmit certain substances, especially salts, to the body of the plant. The usual modern treatment of the soil, which has its origin in laboratory experiments, starts from the question: what substances does the plant consume, what does it draw from the soil and what, therefore, are we to give back to the when it is exhausted? The loss of substance has to be made up if the balance is to be restored. The task becomes widely different when the soil is regarded as a transmitter of subtle life forces, as a kind of diaphragm which separates the spheres above and below the surface. Not only does matter have to be replaced, but a healthy interplay of most intimate working has to be restored. The soil has merely to be replenished, but, in a certain sense, cured of a latent illness. The carrier of this cure is humus. The living forces within it have to be strengthened to counteract excessive mineralisation, and then have to be directed into the plants to keep them healthy. Soil and air, light and warmth must once more be allowed to form a mighty organism which pulsates around the plants and penetrates them so that they again may become the visible organs in the invisible body of the farm or garden. Since the soil is often deprived of life forces, and spoiled through wrong measures (so that it is no longer in good heart"), it must be stimulated with new life. This is done by various preparations sprayed in remarkably small quantities over the soil and the plants, and by various specially prepared plant substances which are inserted into manure and compost heaps. Manure and compost become "earth" quickly, and good earth at that. Rudolf Steiner entrusted to the farmers! the ways by which these spraying and stimulating substances can be prepared. All of them are taken from nature, the raw materials being parts of common plants subjected to special treatment. These substances have come to be known as "Bio-dynamic Preparations".

BIO-DYNAMIC PREPARATIONS

As the methods of manufacturing these preparations are complicated and require a good deal of experience, a number of practical farmers in various countries have undertaken to supervise their manufacture and to guarantee their appropriate production. The preparations can be ordered from these "information centres" in almost every country by those who want to use them. It goes without saying that the use of these preparations alone, apart from the many other necessary measures advocated by Rudolf Steiner, will not go far enough in improving soil and crops. The information centres give comprehensive advice on what the individual farm or garden needs.

One of the most characteristic features about these preparations is their action in fine distribution. The quantity in which they are added to the soil or sprayed out over a large area matters much less than the quality which adheres to them by virtue of their careful production. In this they are comparable to the highly diluted solutions used by certain schools of medicine. It is for this reason that the action of the bio-dynamic stimulators is sometimes called homeopathic. Rudolf Steiner himself advocated high dilutions (so-called potencies) for the treatment of certain illnesses, although he never made it a matter of one-sided preference. He wanted to leave the problem of high dilutions to scientific experience. For him the way was to have the efficiency of such preparations practically tested in order to in

which cases and to what extent they could be found working. Under his Lilly Kolisko, in the year 1923 and after, carried out a systematic inquiry into the effects of progressively rarefied salt solutions upon germinating wheat. She was able to show that the efficiency of such dilutions fades away when the dilution surpasses the 10th or 12th decimal potency, but that the stimulating effect reappears when the dilution is carried further. By a simple calculation it can be figured out that in such high dilutions nothing "material" of the ponderable solute is left. The effect therefore must be called imponderable; that is, not based on the physical presence of the material salt in the solvent. The substance then exercises an effect which is merely dynamic, It is independent of the quantity used, yet dependent on the rhythm of progressive rarefication.

MINUTE QUANTITIES

In spite of the minute quantities (whose presence cannot be proven by chemical means), the effects on plant growth are clearly visible. Such findings can give an idea of the subtlety of the interplay of forces in the soil. It is quite possible that all principal effects in the realm of life are of this dynamic kind. Certainly the investigations of L. Kolisko and Pfeiffer go to show that the presence of infinitesimal traces of substances within the soil and in plants, and consequently also in the organisms of animal and man, may be a paramount influence on health and illness. The bio-dynamic preparations, however far spread-out or sprayed, may be rightly expected to work profound changes. The practical experience with their use bears! out this expectation. A remarkable change in the conditions of the treated soil occurs, it becomes more crumbly and fibrous, and retains moisture more easily. The appearance of the crops is also improved, they become more resistant to drought and infection. In short, the soil and crop show remarkable improvement, even after a short time. The full effect of the methods, however, appears in the course of three or four years. It consists in the continuous increase in the fertility of the soil, and an improvement of the quality and flavour of the produce. Both the plants and the soil in which the forces of life are stimulated are found to provide themselves actively with the required substances by attracting them from the surrounding circuit of forces, just as a healthy organ in the body supplies itself body. actively with what it needs from the circulating blood and the other juices of the body.

Many reports from various countries, even including those with a hot climate, enumerate the good results obtained by the described methods and have made Rudolf Steiner's name known. They all bear witness to the fruitfulness of the measures which have their origin in his investigations. They provide plenty of material for the building of a new and more comprehensive science of life. They also prove invaluable for the efficient handling of the farm organism as a living and self-supporting entity. It may even be said that the task of the farmer and gardener assumes a new dignity because he deliberately contributes to the regeneration of the earth.

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For further information, apply to:

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