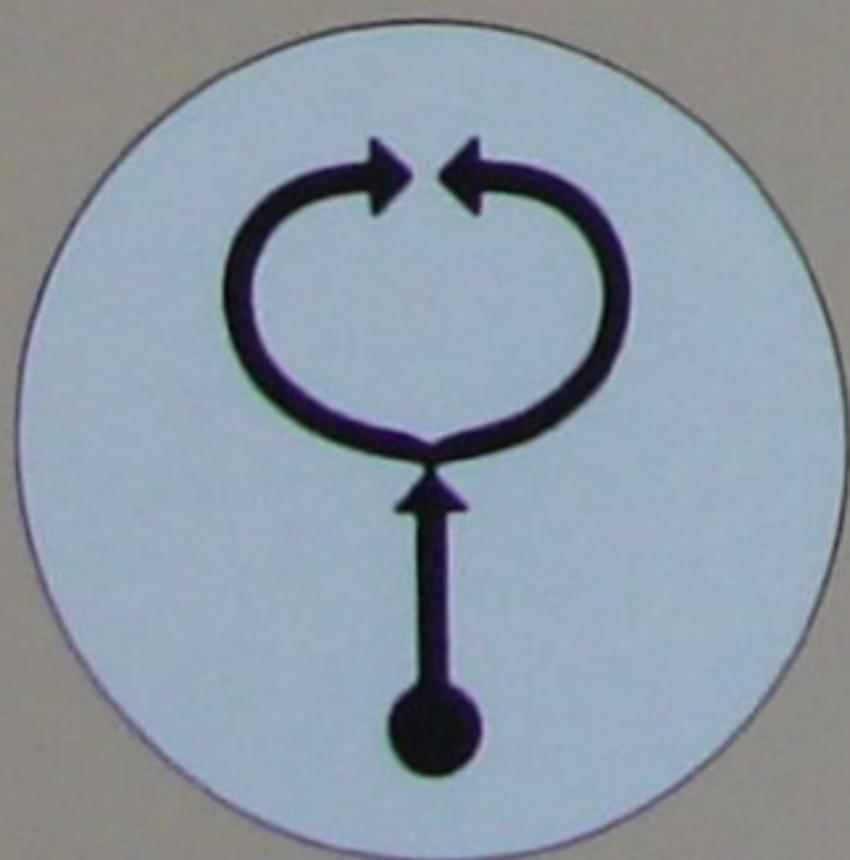


# ERGONOMICS FUNCTIONALISM

A JOURNAL DEVOTED

TO THE WORK OF

## WILHELM REICH



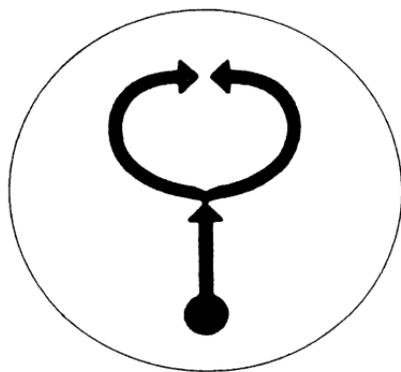
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*Love, work, and knowledge are the wellsprings of our life.  
They should also govern it.*

**Wilhelm Reich**



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# *The Developmental History of Orgonomic Functionalism\**

## **THE FORM OF MOVEMENT – A FUNCTION OF THE FORM OF ENERGY**

The following remarks are decisive in our thought technique if we wish to understand how a purely physical energy could be discovered in the realm of biological emotions.

In natural research, it has become established practice to derive the characteristics of an energy from the movement phenomena which its effects produce. For example, the “resistance” of a wire to the passage of electrical energy is deduced from the degree to which the wire heats up. The rate at which electricity propagates is determined from the amount of time elapsed between contact and an effect at certain defined distances. The wave character of light is deduced from the phenomena of interference and refraction. The speed of mechanical sound waves is deduced from the time elapsed between the generation of the sound and the perception of the sound at certain defined distances. *It is therefore generally the case that the form of energy is deduced from the form of motion.* This principle can also be applied consistently in the realm of the living.

*The basic properties of biological energy must correspond to the forms of movement in living matter.* In order to grasp the functions of the energy which regulates the living, we must observe and describe the common functioning principle of living movements; we must find the element that is common to them throughout the entire sphere of life, and we must seek out the most important variants. A thorough review of all living movement tells us that the living moves in a fundamentally different

way from the rest of nature. Its basic movement is above all *spontaneous*; it is *slow*, compared with light, electricity, or sound waves. It has the character of *surging undulations*. This form of movement is most clearly seen in worms, in the intestines, in amoebae. It can be understood in terms of "peristalsis".

This movement is composed of *expansion* and *contraction* of living matter; it is a kind of oscillation in the physical sense which we call *pulsation*. If we slow down this pulsation in the extreme, we find ourselves in the realm of plant growth. The rings on the trunk of a tree, for example, clearly reflect the alternation of expansion of growth and contraction in the lignification of the new growth. The alternating, pulsating character of plant growth is particularly easy to observe in ivy. As it grows and climbs, the plant alternates suckers, which attach to the wall, with leaf stalks, which extend free in the air. The more closely we look at the arrangements in the plant world, the clearer the rhythmic, pulsatory character of the movement of energy becomes. It is apparent in the positioning of the leaves, in their internal structure, in the branching of the stem, in the splitting up into root and stem, etc.

If we accelerate the pulsatory movement in the opposite direction, then we find ourselves in the sphere of animal organs, namely, the action of the heart, respiration, and especially organic contraction. The jellyfish probably represents the purest form of pulsation; here, locomotion and pulsation are combined into one. The muscles of an animal also pulsate when the animal moves, for example, when a horse gallops or a stag leaps.

In all cases of biological movement, the membranes of the organism are made to pulsate by an energy. The energy impulse originates *within* the living organism. It is independent of external forces, in contrast to non-living matter. *The spontaneous internal movement impulse is a specific characteristic or functioning principle of the living which is not found anywhere else in nature.* Similarly, *movement against the force of gravity is a specific function of the living*, as in the growth of plants, in the upright gait of animals, and in the flight of birds. If we think carefully about these processes, we find that the *mechanical* energy involved here is itself a function of biological energy

and not the other way around. The statement: "The mechanical energy of living movement determines the functions of biological energy" would be nonsense. On the other hand, the opposite statement: "The pulsatory movements of biological energy determine the mechanical work that is performed" is full of meaning. *The mechanics of living movement are secondary; they are a special function of biological energy.* It cannot be primarily mechanical energy which determines the pulsation because living matter pulsates before it engages in locomotion, i.e. moves through space.

These conclusions have decisive significance for our further research into nature, especially as regards placing living nature in the general natural process, and our functional comprehension of non-living nature. This will already be clear to anybody who has ever had anything to do with basic scientific questions because, for the first time in the history of natural scientific research, the *primary* character of mechanical energy is being questioned. *We derive a mechanical principle from the functional principle of pulsation.* Mechanics is reduced to a position below that of functionalism in the sphere of life. Logically, the next question follows immediately, although we do not have to answer it in concrete terms: "Is the derivation of mechanical principles of motion from functional principles of motion valid only in the realm of living nature, or is it a general rule in nature?"

We cannot evade this logical question if we want to describe the living correctly and to assign it its proper place in nature as a whole. We have not gone looking for this question. Instead, it is a necessary result of our reasoning, no matter how revolutionary it might appear to anyone familiar with the principles of natural research. We should not shy away from the facts. The mechanical functioning principle does not tell us anything about fundamental biological processes, and it itself needs to be functionally derived. Anticipating the arguments which will be presented later, this statement can be demonstrated now on the basis of physical formulations. Let us briefly make use of the language of mechanical physics:

The physics of non-living matter defines energy as the "ability

to perform work". The unit of energy and work is the same, namely the *erg*. An erg can be fully described mathematically by multiplying mass by the square of the distance through which it moves, and then dividing this product by the square of time  $m \times l^2 \times t^{-2} = \text{Erg}$ .

Mechanical physics states:

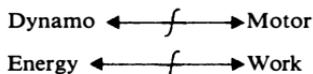
a) A certain amount of mechanical energy performs a certain quantity of work. Including the loss due to frictional heat, they are equivalent.

b) Mechanical energy is a product of force  $\times$  distance. If a force moves a body in space, the force performs work. The unit of force is the *dyne*, which is the product of mass  $\times$  distance divided by the square of time:  $\text{Dyne} = m \times l \times t^{-2}$ .

c) Since a certain amount of work corresponds to a certain amount of energy, the work can also be described as a product of force  $\times$  distance.

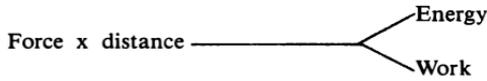
The reader who has carefully followed the logic to this point has without a doubt already spotted, although he may not yet have sorted out, the wide range of problems with which functionalism must cope.

For a mechanist, energy "here" performs work "there". For him, energy and work are *two* natural processes which "interact" with each other. If we set a motor in motion by means of electrical energy, it can perform work. In this way, electrical energy is converted into mechanical work. Vice versa, we can set a machine mechanically in motion, for example, a dynamo, and obtain electrical energy. Mechanical work is then converted into electrical energy. The functional diagram is as follows:



In the case of a dynamo or a motor, we know exactly where the energy is coming from. The energy that moves the motor electrically comes from the dynamo, and the mechanical energy which turns the dynamo comes from the motor. Within this narrow functioning realm, the mechanical principle of thought

applies. It describes in a satisfactory way the interacting function of energy and work. Work always consists of moving a mass through space (Distance=1), and energy is inconceivable without a distance travelled. Therefore the common functioning principle of work and energy is the product of force x distance:



$m \times 1 \times t^{-2} \times 1$  is contained in both formulae, namely in the energy formula and in the work formula, which are mathematically identical:

$$\underline{m \times 1^2 \times t^{-2} \text{ (Erg)} = m \times 1 \times t^{-2} \text{ (Dyne)} \times 1 \text{ (distance)}}$$

The mechanist knows precisely that energy and work are mechanical equivalents, even if he does not describe them functionally in our sense. But his thinking is restricted to the realm of mechanics. On the other hand, we have just traced mechanical energy and mechanical work, as functional antitheses, to the common functioning principle of force x distance. For this reason, whether we want to or not, we can not restrict ourselves to the given realm of functioning because, by formulating the identical nature of energy and work, we have automatically raised the next question: *If force x distance is the common functioning principle of mechanical energy and mechanical work, then it must itself be the variant of a deeper functioning principle which is of necessity broader than that of mechanical energy and mechanical work. What is the nature of this deeper principle? What are its characteristics? What second variant forms the functional antithesis to force x distance?*

To put it briefly and in simple terms: Where does the “force” in the functions of mechanical work and mechanical energy come from? What causes movement and why?

Its sphere of origin must of necessity be superior to that of pure mechanics; it is closer to the common functioning principle of nature. The functioning realms of mechanics have an origin; they are not primordial or ultimate. In principle, they are genetically derivable.

These purely theoretical conclusions break through the rigid

boundary walls which mechanism has set up in nature. We must be aware of the full consequence of this functional deduction. It is in sharp contradistinction to the mechanistic "world view". In addition, it casts doubt upon the principles of thought used by mechanists, as far as understanding mechanics in nature is concerned. It does not dispute the accuracy of the mechanistic method of thinking in the realm of mechanical functions. These, of course, are still valid. But, if the mechanics which we encounter in astrophysical theories is not primary, if it is itself fundamentally and necessarily derivable, then all physical theories come crashing down, in so far as they trace the natural functions fundamentally to mechanics as the ultimate principle.

Classical physics has recognized its own limitations, but it was not able to fill the gaps left open by mechanism. Even the electrical thought principle is mechanical and therefore does not hold up if all mechanics is in principle derivable, if it belongs to a superordinate, broader, and deeper natural principle.

When a mountaineer, with great effort, has reached the peak of a high mountain, he enjoys a wide panoramic view. He does not know the wide open spaces around him in detail; all he can see is their contours. He knows that beyond the limits of the horizon there are other areas, as yet hidden from sight, which stretch away from him. In order to gain practical control over the wide spaces which he has seen, the mountaineer would have to conquer each and every hill, step by step. He cannot do that by himself. He needs co-workers, assistants, courageous, and persistent workers. But the mountain peak which he has climbed, and from which he enjoys the view into the distance, belongs to him. He has conquered it in *practical* terms.

The situation is similar in the case of a natural scientist who has succeeded in solving, in a concrete and practical way, a fundamental riddle of nature. He has conquered an important new fact and may now enjoy the view into the distance from its vantage point. This view is no longer a dream, and no longer scientific speculation. Instead, it is a reality which has not yet been fully grasped.

It was the combining of biological motility, physiological excitation, and psychic sensation into a functional unity which

formed the dominant mountain peak that was in effect scaled by the embryonal science of organomy in about 1936. From this point, I was able to gaze into an extensive stretch of hitherto unexplored territory which I could not hope to conquer in its entirety. But it was conceivable that from that location I would succeed in mastering one or two of the closest peaks. A mountaineer is unable to say which route leads to the next peak, and how that peak is configured. Similarly, I had very little chance of knowing in 1936 what concrete results would be attained by drawing the conclusion that *mechanism in nature is itself derivable from a broader and deeper functioning principle*. Arbitrariness does not enter into such well-controlled thought processes, because in natural science incorrect methods of thinking do not lead to verifiable results. At that time, I committed only one error, which had dangerous consequences. I thought that the view which I enjoyed would also please researchers in the field of mechanistic science. I did not know that it would terrify them as soon as it was presented, and that they would call for the police.

I had no inkling of the tortuous and hidden pathways along which my work would lead in the next ten years, culminating in the organometric results described in the last chapters of this text. My conclusion was not a prejudice but only a possibility. I would not have defended it against attacks, as I do today. I was prepared to let it drop. The way in which my working hypothesis turned out to be true, in the course of the following decade, proves that the correct thought technique is itself an objective natural process in the observer. Thus, we describe natural events even when we investigate the method of thinking itself.

## **FUNCTIONALISM IN THE REALM OF THE BIONS**

The next steps taken by functionalism were experimental. In the beginning they were full of errors and wrong conclusions. I have documented the development of bion research in protocols and also in rough written notes. In the present context, it is not so much the historical aspect of the facts but

the main stations along the way of functional thinking which are important.

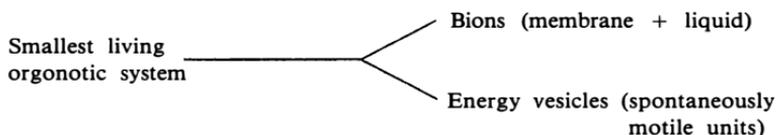
I was familiar with a scientific premonition which had been published twenty years earlier by the highly talented biologist Kammerer in his *Allgemeine Biologie* (General Biology). It is quoted in my book *The Cancer Biopathy*. According to this premonition, there is in nature a force which is neither mechanical nor mystical, a force which regulates life without itself being electrical or magnetic or representing any other known form of energy. I grasped the full significance of Kammerer's thought only in 1940, when I discovered the atmospheric orgone. But it does not appear to have lain dormant in my unconscious when I was searching for the "life force". I had attended Kammerer's lectures when I was a young medical student and the functionalism of his biology had obviously made a deep impression on me. I am glad to be able to use this opportunity to express my scientific gratitude to this man.

The functional principle of the living, which is represented by the sequence of tension-charge-discharge-relaxation, is a broad one. It encompasses all living nature. But it is narrower, in theoretical terms, than the realm of non-living nature. It followed from this that the specifically biological energy is somehow rooted in non-living nature. Despite the ruthless authority of Pasteur and Tyndall in such matters, the existence of biogenesis was methodologically confirmed. I repeat: the thought technique employed by functionalism differs from natural philosophy in that it can only be developed concretely, not abstractly, on the basis of objectively verifiable processes. The functions of swelling and charge were proven facts in the living realm. Their rooting in non-living nature had not yet been confirmed practically, although it was clear that swelling and shrinking, charge and discharge function also in the non-living realm. It is their special arrangement in the four-beat cycle which makes them biologically active. Life is thus identical with non-living nature as far as the two functional pairs are concerned. It deviates from the non-living in that these pairs of functions are arranged in a way which is specific for the living. Logically, there

must be a transition from the non-living to this specific living arrangement.

The next step had to be the experimental swelling of non-living matter. The organism takes up biological energy from the food which undergoes swelling as a result of the cooking process prior to and the digestion process following ingestion. This test was immediately successful. A mixture of different types of foodstuff revealed a uniform *vesicular structure* under the microscope. It was not difficult to determine that *all* swollen matter, from rock dust to boiled egg white consists of vesicles or breaks down into vesicles. These vesicles were later to become known as "bions".<sup>1</sup>

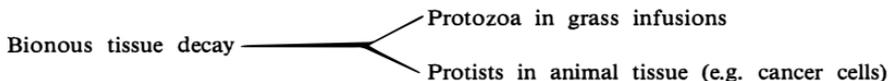
Various tests conducted over the course of several years showed that the vesicles or bions can be interpreted in two different ways. They were, on the one hand, *material* units of living matter. Not only did all swollen material consist of bions, but certain bions, such as earth bions and grass bions, organized themselves into unicellular protists. On the other hand, the bions functioned like units of a still undetermined kind of *energy*. They were, in fact, *energy vesicles*. Under the microscope, it was possible to determine that the energy vesicles exhibited internal and external motion, that they underwent division, attracted smaller vesicles, fused together with other units, lined themselves up in rows, flowed together, etc. "Bions" and "energy vesicles" were names for one and the same structure. Depending on whether one referred to their material-structural nature or their energetic character, one spoke of "bions" or "energy vesicles" respectively. As material units, i.e. "bions", they had exactly the same structure as a more highly developed organism, such as a cell. They had a membrane and contained liquid and sometimes they also had a small, highly refractive nucleus. As energy units, they represented an entirely new kind of special structure.



<sup>1</sup>Cf. Reich, *The Bion Experiments*, Farrar, Straus and Giroux, New York, 1979 [Eds.]

It was clearly evident, especially from the functions of movement and attraction, that they contained energy. This energy originated from within the substance itself, because I had not supplied any energy from outside. Soon, I was struck by the blue color of the more vigorous energy vesicles. This color disappeared when the vesicles degenerated. The membrane remained. The bions were thus *energy-charged* structures.

The visible functions of *attraction* and *penetration* led further to a new and medically important functional unity: the bions, into which swelling moss and grass broke down, organized themselves into "bion clusters", and these clusters, as was particularly clear in the case of amoebae and colpidia, became protists. Under certain conditions, human and animal tissue also broke down into bions. These bions organized themselves into clusters and the clusters in the animal tissue also turned into protists. In the terminology of classical pathology, they were called "cancer cells". The bions thus represented the common functioning principle of infusion protozoa and cancer cells. The protozoa were the cancer cells of aging and degenerating grass, and the cancer cells were the protozoa of degenerated animal tissue, for example, in mice in which cancer had been experimentally induced.



I have described my cancer research in such detail elsewhere that I can limit myself here to the bare essentials. The reader will now be better able to understand that it was not as difficult "to discover so much all at once", as it was to theoretically organize what had been discovered. Without the strict arrangement of the observed facts in accordance with a technique of thinking, there would have been no discovery at all. Many researchers had seen and studied and worked with decomposing tissue, protozoa, cancer tissue, and amoeboid cancer cells. The bions had also frequently been seen and described. The major significance of the thought technique for scientific research is most clearly revealed here in the *functional linking* of the obser-

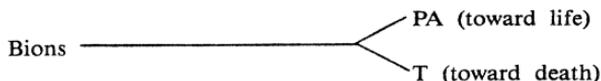
vations which was primarily responsible for ensuring the discovery of biological energy. Scientific fields such as "cancer research" and "biogenesis" which had formerly been so different, now coalesced smoothly into a major functional unity. It is thus incorrect to assert that I made different kinds of discovery in many different fields. It is also incorrect to assert that I have exceeded my scientific competence in any particular area, or that the biological energy was discovered by an "outsider" of the specialized sciences. All I did was to make *one* fundamental discovery by overcoming the irresponsible, although understandable, shyness concerning the central process of sexuality. *I merely discovered the function of orgasm*; but I did this thoroughly and consistently. Everything else came about by itself. My main achievement and endeavor was not so much my discovery (although, of course, that was part of it), but rather the fact that I had overcome deep-rooted prejudices, false assertions, personal impediments, and the life-threatening attacks of emotional plague, which found itself seriously challenged for the first time. The elucidation of cancer followed logically and necessarily on the heels of my discovery of the bions and their energy functions. Let me now return to the main topic.

I have so far discussed two functional groupings, namely the material and the energetic character of the bions, and the functional unity of infusion protists and cancer cells. Precise observation of the energy functions led to a new functional antithesis in the bions. They broke down into two main groups. One group consisted of large, vigorous, highly refractive and blue-shimmering vesicles, and the other consisted of much smaller (about  $0.2 \mu$ ), fast flitting, black colored vesicles. They acted on each other in the following way: the large blue bions were able to paralyze and kill the small black bions. I called the first group "PA-bions"<sup>2</sup> and the second group "T-bacilli". The common functioning principle of these two antithetical groups was that both were types of energy vesicle and both arose in the same way from matter by swelling. Incandescent, swollen coal particles, for example, break down within a few minutes into

<sup>2</sup>Packet bions. [Eds.]

both types of bion. The distinguishing features are the size, the biological effect on animal blood and tissues, and their mutually antagonistic nature. PA bions can degenerate into T-bacilli when they *lose* energy, and T-bacilli can develop into PA bions when they *take up* energy. The basic difference between the two types of bions probably exists in their different charge. I say "probably" because these conclusions are not 100% certain. In the further course of my work, some other distinctive principle may be discovered. I do not want to prevent this from happening.

Another antithesis seemed to exist in the fact that the PA bions were directed toward promoting life, while the T-bacilli were directed toward death, hence the name.<sup>3</sup> When PA bions underwent degeneration, the final result was always the T-bacillus, even if the degeneration passed through various intermediate forms, such as staphylococci, streptococci, or rods.<sup>4</sup>



This antithesis brought functionalism in biology into contact with the antithesis of the life function and the dying process. I do not wish to go into that any further here. But the ability of the bions to organize themselves into cells leads in the direction of the metazoan, while their other ability, namely to degenerate, leads in the direction of the bacterial forms which we know as parasites and pathogens. This confirmed the *endogenous* origin of certain infectious diseases.

One of the most important functional antitheses can be observed directly under the microscope when bions develop out of rigid material. I am talking of the antithesis of *material and energy*. Movements occur inside a membranous sac. The internal movements extend the surrounding membrane sac, and the sac limits and impedes the movements. Since movement is always based on energy processes and the form of the movements reflects the energy form, microscopic observation of the moving

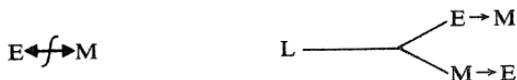
<sup>3</sup>The German word for death is *Tod*. [Eds.]

<sup>4</sup>Cf. *The Cancer Biopathy*

bions is of great importance in discovering the form of biological energy. The occurrence of *internal* impulses, which manifest themselves in the form of vibration, expansion, and contraction of the membrane sac, naturally excludes mechanical Brownian movement as the possible cause.

A number of biological functions can be very simply explained from the antithesis between energy impulses and membrane resistance. For example, the bulging of the membrane, the sprouting, which goes together with constriction, the division and the locomotion, in short the development of specifically biological functions.

At the beginning, when the energy impulses become active, the functional symbol for this antithesis is:  $E \rightarrow M$ , and when the membrane resists:  $M \rightarrow E$ . The functional antithesis of impulse and membrane remains as the permanent feature of living matter (L):



This functional antithesis is, to start with, *mechanical* in nature. The energy impulse exerts a pressure outward on the membrane and the membrane, which is under tension, acts mechanically against the impulse. This functional antithesis is well-known in mechanistic physics as “internal pressure” and “surface tension”. It can be observed beautifully in droplets of water and oil. But this mechanical antithesis is based on a third common principle. It would not come about unless internal movements occurred. It is the function of the *expansion* of the internally released energy (L) which exerts the mechanical pressure on the membrane and in this way produces the reaction of surface tension. “Internal pressure” ( $E \rightarrow M$ ) and “surface tension” ( $M \rightarrow E$ ) also form a mechanical pair of functions in the realm of higher biological functions, e.g., in the case of blood pressure in animals. This function is a fine example of the way in which a mechanical function develops out of a functional expansion movement. Blood pressure in an animal’s blood

vessels is built up by *pulsation*. Pulsation is a function of a deeper and more general order than the mechanical antithesis of internal pressure and surface tension. This pulsation differentiates a lump of protoplasm from an oil droplet. A particle of rock dust does not pulsate, and it has neither internal pressure nor surface tension. In mechanical terms, the oil droplet stands between the particle of rock dust and the lump of plasma. Pulsation is not a "consequence" of biological energy. Instead, *it is the characteristic function of the orgone, its essential form of motion.*

Mechanistic physics does not go beyond investigating the functional antithesis:  $E \leftarrow f \rightarrow M$ . It does not inquire into the common functioning principle from which it originates. Functionalism, on the other hand, looked for the common principle, for the nature of the *internal* impulses in bions. As a result, functionalism came upon the existence of a physical natural force which acts before any kind of mechanical force. The logic in the further development of orgonomy confirmed this part of functionalism in nature. The next logical question had to be: *If energy is released in matter and converts it into pulsating bions, did this matter itself once emerge from the energy which is active in the membranous sac?*

I must admit that at the time I discovered the bions, I did not grasp the full consequence of this logical question. I had spent three years in the erroneous belief that the energy of the bions originates *primarily* from the matter from which the bions developed. I was ignorant of the existence of a *non-material* pulsatory energy. I could not throw off the view held by classical physics that the "primordial" in the universe was made up of material atoms. Consequently, as far as the origin of energy is concerned, my thoughts were concentrated solely in one direction of the function:  $M \rightarrow E$ . The opposite direction of the development function:  $E \rightarrow M$  did not enter into my conscious thinking. As a result, I got into some astonishing difficulties when research moved forward along the logically ordained pathway and corrected me. My best insights into the differences between the mechanistic and functional views of nature were based on this aberration. I therefore do not regret the fact that I was

prejudiced. But I could easily have remained stuck in this position, and my later discoveries would have been impeded. I was on the wrong track in my thinking, while the experiments were progressing down the right one. Contrary to my erroneous thought, I was forced to ascribe to the energy vesicles properties which coincide with the character of living matter. They contradicted the known physical theories about energy. I therefore had to learn to think in a new way if I wanted to follow the objective course of the investigations. I did not need to bother about the reproaches of my opponents that I had fallen prey to mysticism. Even this criticism that I had been taken in by mysticism was significant and helped me understand human thinking.

## THE "RADIATION" OF THE SAPA-BIONS

I would ask the reader to go back and read volume one of my publication "The Discovery of the Orgone"<sup>5</sup> in order to convince himself how great was the contradiction between my atomistically biased thinking and the progress of my experimental observations; and how great was my astonishment and my surprise, albeit tinged with a little anxiety, when I discovered the orgone *outside* the membranous sac of the bion. Anyone who is struck on the head by a tile falling from a roof will develop a special interest in the design of roofs. My atomistic prejudice, and its variance with the facts, represents the "tile" which struck me. From that time on, my interest was necessarily directed towards rigorously re-thinking the atomic theory. There are probably very few atomic physicists today who are not stirred by amazement when they learn that *matter must have evolved from energy*. The mechanistic material concept of nature is trapped in the preconceived notion of the primordial nature of matter or of atoms. It talks of "cosmic dust" of which the zodiacal light and the luminescent "clouds" or nebulous masses in the universe are composed. It is primary atoms, i.e. matter

<sup>5</sup>*The Function of the Orgasm*, Farrar, Straus and Giroux, New York, 1973. [Eds.]

or materials, which are responsible for the various bands of color in the spectra of the stars. This thought technique is consistent as far as it goes, but it is incorrect.

The physical research which derived from the discovery of radium radiation also became caught in an insoluble contradiction between reality and the theory of matter. Radium radiation is conceived of as being made up of moving particles which have a charge, in the same way that in Freudian psychology ideas are combined with affects. However, in order to keep pace with the observations, physics had to develop a special theory of "wave mechanics" and to assume the existence of "waves of matter". Wave mechanics, which operates with energy processes, and the atomic theory, which works with material processes, have ever since been in conflict with one another. An uncertainty was discovered in the field of electron physics which, so to speak, pulled the floor out from under the strictly scientific discipline of determinism:

If we allow a body to rotate about a fixed center, we can determine precisely the rotational moment and the position of the body at any desired point in time. However, this physical requirement cannot be met in the case of the radiation particles. Once one has fixed and determined the position of the particles, their moment of motion becomes uncertain. If their moment of motion is determined, their position is no longer certain. Physics is to this day unable to provide an answer to this insoluble contradiction. Determinism was replaced by calculations of statistical probability. There is a yawning gap in our knowledge, and it cannot be filled mechanistically.

I do not want to go into the solution to this contradiction which functionalism brought to light with the aid of orgone physics. However, purely on the basis of our functional thought technique, we can say that, in the course of its research into the field of mechanical natural functions, mechanistic physics penetrated into the field of primary functional processes. But its method of thinking was not prepared for this functionalism. *Functional processes cannot be comprehended by mechanical thought techniques.* Let us see in which way the functional thought technique blazed the trail in this realm.

Among the bions, there were so-called SAPA bions, energy vesicles derived from sand particles which had been heated to incandescence and made to swell. They exhibited all the familiar properties of the bions: blue color of the contents, division, fusion, field effect through attraction. But when my eyes became inflamed from looking at them through the microscope, I knew that radiation was present. The word "radiation" had been in use for many years without being correct. "Radiation" means that from a body at point A, rays, or "energy particles", as they were formerly known, are hurled towards points B, C, etc. The radiation effect of the SAPA bions manifested itself as light phenomena in the form of a grey-blue nebula in the dark and as thin white streaks. They were magnifiable. They warmed the air to an extent measurable with a thermometer on the order of several tenths of a degree Celsius, compared with air not exposed to their effect. Iron became magnetic in their vicinity; photographic plates became clouded. The radiation seemed to be "omnipresent". Biased in favor of the atomic and electron theory, I assumed that I was dealing with a type of radiation similar to radium rays. But the instruments set up to measure such radiation failed totally. With the exception of the electroscope, they did not react at all. And the electroscope reactions were the opposite of what was expected and were not in keeping with the ionization theory.<sup>6</sup>

At this point, I do not want to go into great detail. The facts have been copiously described elsewhere. I must ask the reader to consult those other sources in order to learn the necessary details. I am concerned here primarily with pursuing the course of my method of thinking.

My atomistic-electronic assumptions failed completely; I was unable to follow the phenomena. Then my old idea that matter in the universe is secondary and energy is primary came back to me. According to this view, matter is frozen or solidified solar energy. Therefore, I tested the effects which the SAPA bions, solar radiation, and the living human body had on organic matter. While the electro-atomic theory left me in the lurch, my

<sup>6</sup>Cf. *The Discovery of the Orgone*, Volume II, *The Cancer Biopathy*.

functional way of thinking led me further. In fact, the sun and the living body had the same effects as SAPA bions. They imparted to organic substance a charge which was measurable with an electroscope. I was once more on the right track. The identical nature of the effect produced by SAPA bions, human body, and solar radiation on organic material fused the phenomena into a functional unity, which was subsequently confirmed. I had discovered a new, very broad functioning realm in which a specific bioenergetic force was valid. I called that force "orgone energy". With one stroke, it threw light on the nature of the charges which I had measured during the bioelectric experiments.<sup>7</sup> The character of the undulating movements of the fog-like phenomenon I had observed in the dark, and the identity of solar energy and body energy, satisfied the condition that the corresponding energy processes take place in an extremely slow and undulating manner. The SAPA bions were also to be regarded as living organisms. At the same time, they formed the bridge from the non-living to the living realm of functioning. My new principle thus encompassed, simultaneously, in the strict sense of functional identity, a highly developed organism, a bion, and a heavenly body. This was without doubt a terrifyingly broad conclusion! *The link between living organism and non-living nature had been experimentally and theoretically forged.* Thus, in principle, the door had been opened wide for us to move through into the dark and decisively important realm of the living organism's place in non-living nature.

<sup>7</sup>Cf. Reich, *The Bioelectrical Investigation of Sexuality and Anxiety*, Farrar, Straus and Giroux, New York, 1982. [Eds.]

To be continued.

## *Orgonotic Pulsation\**

The differentiation of orgone energy from electromagnetism presented in talks with an electrophysicist

### **MEASUREMENT OF THE ELECTROSCOPIC DISCHARGE IN THE ORGONE ACCUMULATOR (1940-1941).**

*Electrophysicist (E.)* I have taken plenty of time. I would not have thought that a simple electroscope could make one rack one's brain so.

*Orgone biophysicist (O.)* I had the good fortune not to approach the electroscope from inorganic physics, but from the study of the biological emotions.

*E.* You don't mean to say that the electroscope is more closely related to the realm of the living than to that of the non-living?

*O.* That is precisely what I mean. The electroscope, not the voltmeter, is the appropriate instrument for determining the nature of biological energy processes.

*E.* You exclude the oscillograph all too readily.

*O.* I'm not eliminating it. But if I can observe phenomena in terms of hundreds of meters, I shall not use measures of fractions of millimeters, if for no other reason than to save my eyes.

*E.* You make great demands on my ability to comprehend.

*O.* No greater ones than were made on the discoverer by the functions of orgone energy. It took years of uninterrupted, hard work and many sleepless nights before I was forced to assert that orgone is not electricity. And all the words coined by physics did not make the task easier.

*E.* But surely you don't believe that there is a consensus of opinion among the electrophysicists.

*O.* I know that. But there is immediate consensus when it

\*Written 1939-44. Translated from the German by Theodore P. Wolfe. Reprinted with permission of Erica Wolfe Burke.

comes to denying social recognition to a new discovery.

*E.* Bitterness does not help research. It is better to prove your contention that the electroscope is more closely related to the realm of the living than to that of the non-living.

*O.* I will have to qualify that statement. *The energy which governs the living also functions in the realm of the non-living.* This means only that the electroscope lends itself poorly to an investigation of those processes which characterize the electrical-machine industry. On the other hand, it lends itself admirably to a study of the non-living, as well as the living, functions of the orgone.

*E.* In our first discussion you explained that many functions of the orgone are incompatible with the concept of positive and negative electric fluids. But you have failed to replace this theory by another and better one. The theory of two electrical fluids explains the deflection of the electroscope leaf which occurs with the approach of a negatively charged rubber rod. The negative electricity of the rubber attracts the positive electricity of the electroscope into the disc and repels the negative electricity into the leaf. This negative electricity in the leaf causes it to deflect. If you remove the rubber rod, the deflection disappears. The positive electricity of the disc becomes free again and neutralizes the negative charge of the leaf.

*O.* We do not have to enter into a deep discussion of the theory of positive and negative electrical fluids. I found that this theory cannot explain organotic phenomena. I also found facts which show clearly that orgone is not electricity. Friction electricity is only a special manifestation of orgone energy and consequently something different from the electricity of Faraday.

*E.* What has that to do with measuring in terms of hundreds of meters and fractions of millimeters?

*O.* Orgone biophysics has been searching for years for the bridge between the realm of the orgone and the electricity of Faraday. The connection has remained obscure thus far, but its existence cannot be doubted. There are some curious facts to be considered. Mathematically, 1000 volts cannot equal, say, 50 millivolts. But this is the impossible conclusion we would have to draw were we to equate orgone and electricity. The first meas-

urements of the biological energy at the surface of the human organism were made with a sensitive electromagnetic oscillograph. The potential differences between an unexcited and an excited place on the surface of the organism were shown to be between 0 and 100 millivolts. On the other hand, a light stroke of the hair of the head or an erogenous zone gives an electroscopic charge corresponding to about 1000 volts. The reactions of the electromagnetic measuring system are thus in minimal fractions of those at the electroscope. Nevertheless, there is a connection between orgone and electricity, but this connection is problematic. *The few millivolts of the oscillograph cannot be the same as the many hundred volts of the electroscope.* If we consider the gigantic work achieved by a living organism, it becomes obvious that the reactions of the static electroscope reflect reality much more faithfully than the galvanometer. The electroencephalogram reveals only unimportant reactions; they are diminutive side effects compared with the work of the brain in terms of energy.

*E.* This contradiction has never been detected. Your facts really do not allow one to equate the volts of the voltmeter with those of the electroscope. I am just struck by the fact that we can discharge the 1000 volts of the electroscope into our body without doing any harm, even without feeling it, while it would be quite unhealthy to touch a wire with a tension of 1000 volts. This certainly indicates a fundamental difference between the energy at the voltmeter and that at the electroscope. I must admit that the idea that a rubber rod contains only negative electricity, without its positive counterpart, begins to strike me as peculiar.

*O.* You are getting entangled in that jungle of theories into which every orgone biophysicist is inevitably drawn when he tries to differentiate the orgone from electricity. Physics has equated the unit of static charge to 300 volts of electrical tension. With that, the erroneous concept crept into electrical theory that the static tension of an electroscope is of *the same nature* as the volt tension of an electric current.

*E.* Apart from a conceptual clarification of the quality of the orgone, do you have any clear-cut experimental proofs that the

orgone functions according to its own *specific* laws?

O. There are such proofs. So many of them are obtained with the electroscope that we are justified in calling it an *orgonometer*.

E. Agreed. Meanwhile, what about the proof?

O. Would you summarize for us the prevailing theory of the discharge of the electroscope, our orgonometer?

E. That's simple enough. Theoretically, a charged electroscope should retain its charge. Experience shows that this is not quite the case. There is a *spontaneous* discharge, the so-called "natural leak". It is usually ascribed to the humidity of the air which is assumed to establish a connection between the rod which carries the leaf and the casing. However, there is no consensus on this point among physicists. But if one subtracts the spontaneous discharge from the measurements made, it is possible to exactly determine the speed of discharge. This principle is always used in radium research. It states that *radiation of any kind electrifies or ionizes the air between the rod and the casing. Since ionized air equalizes electrical potentials more quickly than non-ionized or weakly ionized air, the speed of discharge of the electroscope is an indication of the intensity of the ionization effect.*

O. According to this concept, then, the quantity of electrical energy from a radiation source is in direct proportion to the speed of the electroscopic discharge. In other words, the more intense the radiation, the more rapid the discharge.

E. That's right. In principle, the measurement of cosmic radiation rests on this. Electroscopes discharge more rapidly in higher strata of the atmosphere than in lower. This points to a more intense cosmic radiation in the higher strata. The diminished intensity in lower strata is ascribed to the absorption of cosmic rays by the atmospheric air. But cosmic rays possess an enormous capacity to penetrate, for they have been found, by way of measurement of the electroscopic discharge, deep in the ocean and in mines. This capacity for penetration is not yet understood.

O. This concept can be correct only if the prevailing theory of electroscopic discharge is correct. It stands and falls with the

theory of the electroscope.

*E.* You don't doubt the fact that an electroscope which contains radium, or is exposed to Xrays, discharges more quickly than an electroscope without such ionizing influence?

*O.* I don't doubt this fact. But I object to the uncritical application of concepts which are valid in one field to another field. You fail to consider the *spontaneous* discharge of the electroscope.

*E.* Not at all. The air always contains a certain amount of free ions, which may be minimal, but is still large enough to explain the spontaneous discharge of the electroscope.

*O.* If I remember correctly, the phenomenon of lightning is explained by "air electricity." But you say that the ion content of the air is very small. Otherwise the air could not be a poor conductor, or, to put it differently, a good insulator. How can this statement be reconciled with the explanation that such vast amounts of energy can accumulate in the atmosphere that one bolt of lightning can discharge millions of volts?

*E.* This is indeed a contradiction which has not been explained. One simply does not know where the gigantic amounts of electrical energy discharged in a thunderstorm come from. They are at variance with the very small amount of free ions in the atmosphere.

*O.* Don't you think that here we are encountering the same impossible equation according to which millions of volts equal millivolts?

*E.* That is really true.

*O.* From the standpoint of the theory of positive and negative electricity, this strange equation is unsolvable. But we know that the atmosphere contains orgone, and that orgone is not electricity, though we do not know what the latter is and how it functions. Let us now bring in our orgone and no longer measure the charges "electroscopically," but organometrically.

*E.* All right. I admit I am very curious, as I find myself in a tight corner. You are aware that you have to prove quite a lot.

*O.* I know. What experiment would you suggest?

*E.* I can only start from certain known suppositions. One is the acceleration of electroscopic discharge under the influence

of ionizing radiation. Let us measure the speed of discharge inside and outside your orgone accumulator. If the speed of discharge is the same, then there is no difference in the energy concentration. Your contention that there is a concentration of atmospheric energy in the accumulator would be proven incorrect, and we would be unable to decide whether or not orgone is the same as electricity. If, on the other hand, the accumulator concentrates the energy, then there must be a difference in the speed of electroscopic discharge. If your orgone is the same as electricity, as I am still assuming, then the electroscope will discharge more quickly on the inside than on the outside. Do we agree?

*O.* Yes, on the proviso that you admit the difference between orgone and electrical energy if the experimental result is neither of the two you mentioned, but a third, unexpected one.

*E.* Granted. But I do not expect a third possibility; only the two are conceivable.

*O.* Let's proceed to the experiment. We charge the electroscope, my organometer, to the same scale division for both measurements.

*E.* —The electroscope discharges *much more slowly* in the orgone accumulator than outside in the free air. Neither of the two predicted possibilities came true. This result is entirely unexpected, and I cannot explain it.

*O.* Only because you continue to approach the orgone function from the theoretical assumptions of electricity.

*E.* It could be that the air on the outside circulates more quickly around the electroscope than on the inside of the accumulator. Consequently, a greater number of air ions streak by and accelerate the discharge compared with that on the inside.

*O.* Couldn't this explanation be checked?

*E.* I shall let the electroscope discharge twice in the open air, one time as is, and one time with the use of an electric fan.—I find that *the fan has no influence* on the speed of discharge. After this, I must admit a fundamental difference, even an antithesis, between the atmospheric energy and electromagnetic energy. But now it is up to you to make comprehensible this

result, which clearly contradicts the application of electrical concepts.

*O.* That will not be possible without further observations at the organometer. For example, it is easy to see that a Slav, whom we do not know, reacts differently from an Englishman whom we know well. It is much more difficult to define this difference before one has learned to know the unknown. You will admit now that it was necessary to free oneself from the misplaced application of the electrical theory of the two opposite fluids before it was possible to basically understand the orgone, which is quite different.

*E.* I am glad to admit that now. I am very curious what the study of the specific orgonotic qualities will reveal. Have you any ideas?

*O.* Although I know that the orgone is an energy with specific biological effect, and although it would be easy to derive an hypothesis from the biological functions of the orgone, I prefer to let the physical experiment speak for itself. If the results agree with the basic biological functions, all the better. If not, there will be new riddles.

*E.* I couldn't say at this moment which possibility I would prefer. If there were agreement, this would provide a decisive insight into the mystery of living functioning. If there were not, we would have a lot to think about.

### **VARIATIONS IN ATMOSPHERIC ORGONE CONCENTRATION. A PRELIMINARY INTERPRETATION OF THE ORGONE FUNCTION (AUGUST 1941).**

*E.* I have tried to understand the organometer's slower rate of discharge in the orgone accumulator. I thought there might be radioactive substances somewhere in the area outside the accumulator. This could explain the fact that the organometer discharges more slowly in the accumulator than on the outside, because the metal walls would prevent the accelerating influence of the radium activity from entering the inside of the accumulator.

O. Do you assume that such substances are to be found *everywhere*?

E. No.

O. You obtain the same result no matter where you place the apparatus. Orgone is present everywhere, even though in varying concentrations. Radium, on the other hand, is rarely found.

E. That's true. Your theory would be strengthened however if the phenomenon of a slower discharge in the presence of a *stronger* orgone influence could be confirmed in some other way.

O. There is such a confirmation. I found it by chance when I measured the daily variations of the atmospheric orgone concentration over a period of several weeks in the summer of 1941.

E. What gave you that idea? As far as I know, such an experiment was never made before.

O. This experiment was made to refute the belief that humidity or atmospheric "electricity" influence the spontaneous discharge of the electroscope. If you measure the electroscopic discharges every hour, what result would you expect from the standpoint of the air ion theory?

E. Two assumptions would be possible: First, that the ion content of the air remains essentially constant. In this case, the spontaneous discharges of the electroscope would also remain constant. Second, that the sun radiation increases the electric charges in the atmosphere. For example, the air at high altitudes is strongly ionized, containing much orgone. In this case, one would expect that the discharge of the electroscope, measured hourly, would be slowest in the early morning, most rapid at high noon, and again slower toward evening.

O. From the standpoint of your electric theory, this expectation is entirely correct. However, the hourly measurements with the organometer show the exact opposite. Do you want to try it?

E. This is too important to be taken lightly. I shall check up on it. —

I find you are right. *On clear days, the discharge of the electroscope is far more rapid in the early morning than between 2 and 4 pm, and it becomes more rapid again toward evening.* This contradicts the theory of ionization and agrees with the

results obtained from measuring the discharge inside and outside of the accumulator. But that doesn't make the result comprehensible. Clearly, the ionization theory fails here; a new interpretation is difficult.

*O.* Let's leave the interpretation to further observation. From the standpoint of the ionization theory, what result would be expected in the case of cloud formation or a thunderstorm?

*E.* The electroscope would discharge much more slowly because the clouds decrease the ionization of the air by the sun and take up electrical charges from the atmosphere.

*O.* Do you want to take some measurements just before and then during a thunderstorm? There is a good deal of cloud formation just now.

*E.* I find that the electroscopic discharges become *more rapid* before and during cloud formation. A unit of charge, which takes dozens of minutes to discharge during clear weather, discharges in a few minutes during heavy cloud formation. I am going to take electroscopic measurements at home when we have our next thunderstorm, and will give you a report.

*O.* Our orgonometer thus measures orgone, not electrical charges. Before reaching any theoretical conclusions, I would like to mention a further contradiction in the theory of electricity, a contradiction which is completely resolved by the discovery of the atmospheric orgone. Does an electrically charged metal sphere, which we have equipped with a metal point, discharge faster or slower than a similar sphere without such a point?

*E.* The sphere with the point will naturally discharge much more quickly. It gives off its electrical charge to the surrounding air much more rapidly than a sphere without a point. Every schoolboy knows that!

*O.* Exactly. Now, another question: How does physics explain the effect of the lightning rod?

*E.* Every schoolboy knows that, too. Benjamin Franklin had observed that metal points draw electrical charges from rubbed electrical substances, such as amber or glass. That's what he based his lightning rod on. The metal point draws the electricity from the charged cloud. It also attracts the lightning and conducts it to the ground, thus protecting the building against the

uncontrollable spreading of the electricity in the lightning.

O. If I remember correctly, there was once a dispute among the learned members of a commission as to whether the lightning rod should be provided with a sphere or a point.

E. I don't see why you should mention this uninteresting event.

O. I only wished to indicate that, as long as two hundred years ago, there was an unconscious hint of the contradiction in the theory of electricity which we are now discussing. Has it ever struck you that one and the same theory assumes that a metal point *gives off* electricity easily and on the other hand, in one breath, so to speak, it *absorbs* it easily? Is it conceivable that one instrument should fulfill two such antagonistic functions with one and the same energy?

E. I was never struck by that contradiction, but I believe that many physicists have given it thought.

O. Would it be possible to draw off electrical energy from a charged sphere by means of a dynamo machine which is placed about one meter from a lightning rod?

E. I don't know, but I would doubt it. Electron and X-ray tubes certainly do not contain any kinds of points at the anode to attract the electrons coming from the cathode. On the other hand, there is the "electric wind" at a candle flame which is placed between a metal point as cathode and a plate as anode.

O. I do not intend to meddle in problems of electricity. I know too little about it. But in order to move ahead I have to differentiate the orgone, which is well known to me though not to the electrophysicist, from electricity. Otherwise, we could not even understand the results of our measurements of the electroscopic discharges. The principle of the lightning rod proceeded from the phenomena of "friction electricity." It is strictly at variance with the principle of electricity which is based on the movement of wires in magnetic fields. We have seen that the old static electricity, or friction electricity, is only a special case of the orgone. The principle of the lightning rod is absolutely correct, except that it has nothing to do with electricity. The lightning rod does not draw "electricity" from the clouds or the lightning. It draws orgone, just as does the point on our

fluorescent gas tube.

*E.* That is logical, but it will cause an uproar.

*O.* I cannot submit to that. The facts are in complete harmony if viewed from the standpoint of orgone functions. They are at variance if they are forced into an all-embracing electrical theory. But now we might venture a first interpretation of the discharges of the orgonometer. Do you think that the well-known principle of the equalization of different levels of charge or tension is applicable here?

*E.* Water flows from a higher basin, or one with a greater potential energy of drop, to a lower basin with lower potential energy, and not vice versa. This is the principle of the equalization of potential differences. The "tension" existing between higher and lower altitudes or stronger and weaker charge constitutes the "potential difference." The work produced corresponds to the kinetic energy which results from the potential energy in the process of equalization of the potential difference. This is valid for the "energy of position" as well as for electrical or caloric energy. A warmer body gives off heat to a colder one, and not vice versa. These are some of the most elementary principles of physics and I would hardly expect you to doubt them.

*O.* Far from it. My only interest is that of investigating, without prejudice, the functions of orgone energy. In doing so, however, I cannot let myself be led astray by principles which are valid for other forms of energy. One reason that the orgone has been overlooked and static electricity misinterpreted is precisely the fact that the orgone follows different natural laws. If, according to the basic law of electricity, energy always flows from the more to the less highly charged body, what would you expect to happen when you touch an electroscope, charged with about 200 volts, with your finger? As you have seen, with one gentle stroke of our hair, we can easily take off an amount corresponding to about 1000 volts. From the standpoint of its capacity to produce work, our organism is much more highly charged than the electroscope.

*E.* Our theory dictates that the electroscope would become charged to its full capacity from our organism.

*O.* Please touch this electroscope which is charged in the

amount of about 500 volts.

*E.* It *discharges* promptly and completely when I touch the disc with my finger: *energy flows from the less to the more highly charged body*. That simply doesn't make sense!

*O.* It is an absurdity if you apply your electrical theory to the phenomenon. It does make sense if we recognize the validity of specific orgonotic laws of functioning. We must assume that every organism represents an autonomous *orgonotic energy system*. A stronger gamete attracts a weaker one; the ovum attracts the spermatozoon, etc. A sand bion with a strong orgone charge kills an orgonotically weak bacterium simply by withdrawing orgone energy from it.

*E.* I don't know anything about biology, so I cannot judge the validity of your statements.

*O.* The cosmic orgone energy was discovered in the study of the functions of sexual biology and the energy of drives. Thus orgone energy must contain those energy functions which specifically differentiate life functions and mechanico-physical functions. The fundamental law of biological pulsation was not discovered until now precisely because the biologists tried to apply the laws of chemistry and physics, as they operate in the realm of the non-living, in the realm of the living. This methodological question will be a matter of polemics between orgone biophysics and the biologists. But I don't believe that the physicist can isolate himself from functions which are specific to the living, not only because he approaches the processes of nature as a living system, but also because there is a form of energy, the orgone, which does not follow mechanistic laws. Failure to see the special qualities of biological energy functions caused the atmospheric orgone to be overlooked. Physics claimed to be the leading natural science, even in biology. It has not fulfilled its promise. On the contrary, I am convinced that the mechanistic concepts of the universe held by physics has blocked biology from finding the path to an understanding of the life functions.

*E.* You are getting dangerously close to the metaphysicists who assume the existence of a special "life force."

*O.* Well, nobody will doubt the existence of an energy or force which governs living functioning. It is only a matter of how

it is conceived and comprehended. Physicists and mechanistic biologists deny its existence altogether. Metaphysical biologists divorce the life force completely from the realm of physics and relegate it to the supernatural. Orgone biophysics solves this problem. The specific biological energy does not exist "on the other side"; it is not metaphysical. It exists physically in the atmosphere and is demonstrable visually, thermically, and electroscopically. It functions biologically in the soil and in the living organism. There is a continual process of energy metabolism between the purely physical and the biological form of the orgone, significantly in the respiration of plants and animals. Orgone experiments have given ample demonstration that the physicist could gain much from the knowledge of purely biological functions.

*E.* As you probably know, a great many physicists are dissatisfied with the mechanistic concept of life. Many are metaphysicists and mechanists at the same time. They believe in the transmigration of souls

*O.* and fight the functional-energy elucidation of the life process. I have often experienced that.

*E.* The change from purely mechanistic to functional thinking in physics has not satisfied the physicists' need for metaphysics. The disclosure of the transformation of chemical elements, and the disolution of the antithesis of matter and energy have certainly shaken the mechanistic world view; but instead of clarity and peace there is only more confusion in the scientific ranks. The gaps which were created in the mechanistic principle of causality have not been filled with a better, more reliable method of thought.

*O.* That has much to do with the purely psychiatric problem of human emotional structure, which operates in thinking as in experimenting.

*E.* Please, don't bring psychiatry in this too.

*O.* The rigid boundaries between the natural sciences will disappear. Today's science speaks too many languages, like the generation which sought to build the tower of Babel and foundered on the jumble of tongues. They must again recall the sim-

ple functioning laws of nature which govern nature's processes.

*E.* I think that if we want to interpret your new findings we will have to go back to the simplest observations which were made in the early days of the theory of electricity.

*O.* Quite so. It is all too easy to get lost in the ocean of words and concepts which, in the course of centuries, have amassed from unrelated details.

*E.* Let us return to the primitive fact that a charged metal sphere *loses* energy through a metal point

*O.* and that the same metal sphere can *take up* energy through a metal point. The materials and their form are the same in both cases. The processes however are exactly opposite. Thus it is necessary to conclude that the energy in one process cannot be the same energy as in the other.

*E.* The process by which we charge your organometer is that of electrical influence. The negatively charged rod of insulating material draws positive electricity through influence into the point and gives off negative electricity into the electroscope leaf making it deflect.

*O.* Can you describe the *form* in which this function of influence takes place?

*E.* The process is a gradual, continual one.

*O.* Now, does the equalization between the negative electricity of the leaf and the positive of the sphere take place one time, or does it occur repeatedly?

*E.* According to the basic law of electricity, it can be only once. If, for example, the rubber rod has attached a freely suspended cork and touches it, the antithetical electrical substances or fluids become equalized. The cork takes up the electricity of the rubber rod and is consequently repelled. It cannot be attracted again without a new manipulation. Otherwise we would have produced the impossible *perpetuum mobile*.

*O.* Another theoretical orientation, in my case the organotic or bioenergetic one, leads to new arrangements which prove the old concept erroneous and replace it by a more correct and inclusive one.

*E.* Among the first electrophysicists, there were a few who did not speak of positive and negative electricity, but of a *more* of

electricity as compared with a *less* of it. Others spoke of an "affluence" and "effluence" of electricity.

O. Let us stop here in order to grasp the concept of electrical influence more precisely. We bring our negatively charged rubber rod close to the point of the electroscope (orgonometer) and achieve a deflection of the leaf through "electrical influence." The rubber rod does *not* touch the metal of the electroscope. Thus, electricity does not flow from the rubber rod into the metal of the electroscope. The effect of the influence takes place *through the air* or, better, as *the result of an electrical field between rubber rod and metal point*.

E. That's correct.

O. Now, I bring my hand close to the electroscope, approaching it from above. If the electroscope is charged, that is, if the leaf is deflected, it begins to move. It goes down when I bring my hand close and it returns to its former deflection when I remove my hand.

E. Right.

O. If, however, the electroscope is not charged, I cannot produce a movement of the leaf with my hand.

E. Your hand is not a charged rubber rod.

O. But it is surrounded by an energy field! Why does the electroscope react to the electrical field or the influence by the rubber rod but not to the electrical field, or influence, of my hand?

E. This contradiction has never been explained.

O. There is more to it. As we have seen, I can influence a charged electroscope with the energy field of my hand. But I cannot influence an uncharged one.

E. I admit that is not comprehensible.

O. At the moment, our electroscope discharges an amount of energy corresponding to about 600 volts. That is, my energy field, like that of the rubber rod, is capable of strongly influencing the amount of 600 volts, increasing or decreasing it.

E. That's a demonstrated fact. But I don't see what you are getting at.

O. I would like to demonstrate the absurdity of a certain kind of scientific thinking, namely, that of drawing conclusions from *isolated* phenomena, *without making comparisons*. Please con-

nect the two poles of this 6-volt battery with a wire and plug it into this voltmeter.

E. It shows 6 volts.

O. Now bring the rubbed polystyrene rod and then the palm of your hand close to the wire.

E. —There is no reaction.

O. Exactly. Now, according to your theory of electricity, it should be possible that our palms or the rubbed polystyrene rod definitely disturb 600 volts by influence while at the same time they cannot influence 6 volts. That makes no sense. The wire contains electrons, and so does the metal of the electroscope. The electrons of the electroscope are set in motion by influence, while those of the wire are not!

E. Well, in the wire the electricity *flows*, while in the electroscope it is steady.

O. Will a whip get a standing horse going but not influence one that is in motion?

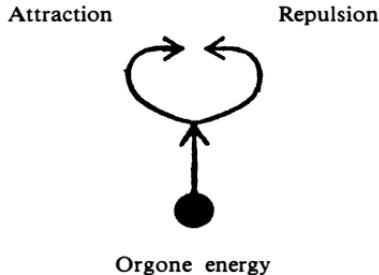
E. I admit the contradiction, but electrophysics has not solved all problems.

O. That makes the arrogance of so many of its representatives all the more incomprehensible. The point is that the field effect of the palm and the rod, which you call influence, is due to an *orgonotic energy field* and not an electrical one. Otherwise, my palm would disturb the 6-volt tension just as it does the 600-volt tension. Now let us try to understand the purely physical functions of the orgone by approaching it from the standpoint of *biological* observation. Two organisms of different sexes are "sexually attracted." If we take the energetic view of such fundamental processes as sexuality seriously, we must consider the *attraction in sexual excitation an orgonotic energy process*. From a strictly functional point of view, there is no process without its counterpart. The counterpart of *attraction* is *repulsion*. Repulsion, also, is a function of sexuality. After attraction has occurred, two copulating organisms adhere to each other until an orgasmic energy discharge takes place in which the sexual substances are expelled as a result of repeated muscular contractions. After this, the organisms detach themselves.

E. That seems very far-fetched to me. Do you wish to com-

pare a human relationship with the attraction and repulsion of the electroscope leaf?

*O.* Wait a minute. The sexual processes are not determined by positive and negative charges. The male and female organisms are not charged with “opposite” signs, but they are both *excited* by the same unitary energy. This energy clearly shows two antithetical functions: attraction and dissociation (or repulsion). There is no reason to assume the existence of two separate substances or fluids for these two antithetical functions. As the experiment confirms, it is one and the same orgone energy which functions in two antithetical directions or ways, like this:



Attraction and repulsion as antithetical functions of orgone energy.

*E.* If this is not just a new hypothesis to add to a thousand others, if it explains known facts better than mine does, and if it explains new connections, then I shall agree. But let's not get too far afield. We started with the question: what is the principle according to which the discharge of my electroscope, your organometer, takes place, if the principle of the equalization of potential differences is not applicable?

*O.* I have deliberately led to this question, but could not do it very well without the detour into these biological phenomena. These considerations help the orgone-physical experiment; they carry us further and fulfill your demands for the justification of a hypothesis.

*E.* I am eager to see your experimental proof.

O. We shall carry out this experiment in the dark orgone room.<sup>1</sup>

Using this polystyrene rod, please draw off orgone from your hair and bring the excited rod to about 5 cm. from this fluorescent argon tube. Then keep your hand steady.

E. —I have done so several times. Nothing much happened, except that, once, a small area of the tube began to display a weak glow.

O. Now carry out another experiment. Hold the excited rod about 30 cm. from the tube, then bring it close to the tube, so as to almost touch it, and then remove it. Repeat this as often as you wish.

E. As I come close, the tube glows several times; this happens at shorter intervals as I come closer. If I hold the rod steady at the same distance from the tube, nothing happens. If I move it away from the tube, it glows several times in succession. The more often I repeat the movement of the rod to and fro, the more brightly the tube illuminates.

O. Now move the excited rod along the tube lengthwise, and evenly.

E. There is an irregular flickering. *The glowing of the argon is intermittent* and does not seem to be a direct result of the even movement of the rod.

O. These phenomena cannot be explained by a uniform electrical influence from the rod to the argon gas or its ions. Otherwise, the gas would glow as long as electrical energy from the rod influences it. Then, when the electrical energy was discharged, the glow would disappear. On the other hand, these phenomena are in full accord with the basic functions of living systems. The tube illuminates only when the rod is brought close to it and removed from it. It does not glow when the rod is not being moved. A muscle contracts only when the galvanic current is turned on and turned off, not when a steady current is sent through it. These two phenomena are referred to in biology as "opening contraction" and "closing contraction." The

<sup>1</sup>Reich refers to a room in the students' laboratory at Orgonon in which the walls and ceiling were layered with metallic and non-metallic material, creating a large accumulator. [Eds.]

muscle does not contract according to the electrical stimulus, but according to its bioenergetic structure. In response to the same stimulus, the striated muscle contracts rapidly, the smooth muscle slowly and in a wave-like manner. The contraction of the muscle is only precipitated by the turning on and off of the current. *The energy of the contraction, however, lies in the muscle itself.* It is not the electrical energy supplied from the outside which is expressed in the contraction but the biological energy in the muscle which is stimulated by the turning on and off of the current. In our experiment, you brought an orgone-excited rod close to the fluorescent tube and removed it again. The tube "luminesces" when the orgone charge is *moved*. This phenomenon of lumination, as we call it, is based on an alteration of the field of the energy in the rod, and not on the static influence of the energy field.

*E.* I understand. You leave the domain of positive and negative fluids or substances and enter that of *moving energy fields*. Would you equate "energy field effect" and "charge"? You said that orgone "charges" the organometer.

*O.* You must admit that it is extremely useful occasionally to go back to the most elementary concepts. As a matter of fact, I do not believe that my orgone rod "charges" the organometer, but that, by way of the moving orgone field, it "excites" it. Typically, this excitation occurs only when the contact of the energy field with the substance is established and when it is interrupted. The fluorescent tube luminesces only when the rod is brought close and when it is removed. If we move the energy field lengthwise along the tube, there is a sequence of contacts and contact-interruptions. Accordingly, the lamp flickers; it luminesces and stops luminescing intermittently.

*E.* Faraday did not succeed with his induction experiments until he hit upon the idea of turning on and off the current in the primary coil, in other words, of making excitations and fields of excitation appear and disappear. The secondary coil develops a current only with the appearance and disappearance of the energy field in the primary coil; it does not react to a constant current.

*O.* This is probably the place where the riddle of the connec-

tion between orgone and electrical current has to be sought. But let's not go into that now. It is only important to remember that there is a functional similarity between the contraction of the muscle when the current is turned on or off, the induction current in the secondary coil with the turning on or off of the current in the primary coil, and the lumination of our argon tube when the orgone rod is brought close or removed. In all three cases, the process is dynamic, that is, functional, and not static. It is not a matter of one discharge of positive and negative electrical particles, but of a repeated attraction and dissociation in the excited substance.

*E.* Can you demonstrate this experimentally?

*O.* I succeeded in doing so after I had freed myself of the static concept of the two separate electrical fluids. Instead of the rigid, heavy, and therefore clumsy, aluminum or gold leaves, we use two thin silk threads, which we attach to a metal rod. We then interrupt the conduction from the metal rod to the metal knob by an intermediate piece of hard rubber or plastic, and bring our orgone rod close to the knob. Do you want to try it?

*E.* When I bring the rod, which was excited with orgone from the hair, to the knob, there are several successive attractions and repulsions of the silk threads. The same happens when I take the rod away. The reaction reminds me of contracting frog's legs. At first, I felt like rejecting this comparison.

*O.* Nevertheless it is entirely correct. In addition, you have reproduced the lumination phenomenon in a *mechanical* form. The silk threads remain immobile when you do not move the rod. They move back and forth when you bring the rod close and when you remove it again.

*E.* This demonstration is simple and convincing. I admit that in this case the assumption of two electrical fluids does not apply. It is not a single attraction with consecutive repulsion, but repeated attraction and repulsion. What conclusion do you draw from this observation?

*O.* We must assume that every *establishment of contact* and every *interruption of contact* in the energy field goes with two opposite functions in the excited substance: *appearance* and *disappearance of excitation*. The fluorescent tube luminates and

ceases to luminate, a current appears and disappears in the secondary coil, and our silk threads attract and then repel one another.

*E.* In brief, you replace the attraction of the positive and negative electrical charges by the attraction of two orgonotically excited substances, which are exposed to the influence of one and the same orgone energy. Furthermore, you replace the repulsion due to two negative or two positive electrical fluids by the repulsion or dissociation of two orgonotically excited bodies due to the disappearance of the excitation or lumination.

*O.* Observation of the processes of biological excitation allows no other conclusion. Copulation and separation of two individuals are the prototype of the phenomenon. Attraction of two orgonotically excited systems is clearly and simply demonstrated to us in the realm of biology. Dissociation is more complex.

*E.* In our discussion today, we proceeded from the fact that the electroscope's slower rate of discharge in the orgone accumulator, and around noontime, cannot be explained on the basis of the ion theory. But I do not see how the function of attraction and repulsion of orgone energy explains the phenomenon.

*O.* In the early days of orgone physics, I tried to explain the organometer's slower discharge in the accumulator in bright sunny weather by the principle of potential difference. I assumed that the electroscope could discharge less easily into an atmosphere with a high orgone tension than into one with a low orgone tension. However, this assumption had to be dropped. Since, in the realm of orgone biophysics, the stronger orgonotic system always draws energy from the weaker, there can be no potential difference in the sense of mechanics (from high to low) or electrics (from the stronger to the weaker). Another assumption was more in accord with the facts: the orgone-excited organometer gives off orgone to the surrounding air and, at the same time, takes up orgone from it. *Emission* and *absorption* of energy take place simultaneously. A vacuum tube in the orgone room takes up orgone and at the same time emits it. Thus, we must give up the usual concept of potential difference and assume a simultaneous emission and absorption of orgone energy.

I suggest that we postpone the application of this new concept to the spontaneous discharges of the organometer until such time when further observations have made us more familiar with the characteristics of orgone functions. Thus far, we have established the following pairs of functions:

1. *Absorption* and *emission* of orgone
2. *Attraction* and *repulsion* of two orgone systems
3. *Lumination* and *cessation* of lumination of the argon gas in the moving orgone energy field.

To be continued.

## *Orgone Functions in Weather Formation\**

I am forced to follow the line which is dictated by my observations of orgone energy. It is not my purpose here to raise any meteorological problems, let alone attempt to solve them. However, the dependence of medical orgone therapy on the atmospheric energy conditions inevitably compels me to conduct observations of a meteorological and astronomical nature. Indeed, such observations sometimes throw light into the obscurity of these rather remote fields of science. Naturally, one cannot simply ignore this fact. It would not be appropriate here to examine in detail the range of theories which have been conceived over the centuries to explain the phenomena of weather formation. Orgone research brings to light such fundamentally new and different facts that we cannot avoid clashing here and there with the customary opinions expressed on the subject of weather. Let me cite just one example to demonstrate how badly you can become entangled in insoluble contradictions if phenomena such as cloud formation and lightning are approached solely with the usual theory of positive and negative electricity, and if attempts are then made to reconcile this theory with the orgonotic phenomena observed. The prevailing view is that warm air rises into the higher, colder regions of the atmosphere, taking with it the water vapor contained in the air. Once it reaches the colder regions, the water vapor is said to "condense" into extremely fine droplets. These droplets then take up "positive electricity from the air" and clouds are formed. As a result, a tension builds up between the positively charged cloud and the negatively charged earth, and this tension is discharged in lightning.

Anyone who deals with the phenomena of orgone energy has

\* First version written in summer 1943. Revised and expanded in summer 1946. Translated from the German by Derek and Inge Jordan.

major difficulties in trying to understand this theory and becomes involved in insoluble contradictions. Above all, the theory fails to explain the phenomenon of lightning *between two clouds* which does *not* strike the earth. It follows from this that there must be two different sources of lightning: First, there is lightning caused by the discharge of electricity between positively charged clouds and the negatively charged earth. Second, there is lightning caused by discharges between positively and negatively charged clouds. Even if we accept such a complicated interpretation, it still leaves unexplained the phenomenon of *sheet lightning in the absence of clouds*. A third interpretation would be needed to explain the phenomenon of sheet lightning which takes place over wide areas of cloudless sky.

Nor does the electrical theory of cloud formation tell us anything about the *origin* of "positive atmospheric electricity". The air contains only minimal quantities of free electricity and it is also an extremely good insulator. *What, then, is the source of the gigantic amounts of energy - in the order of several million volts - which are discharged in a lightning flash?*

We feel, therefore, that the admission by large numbers of physicists and astronomers that the phenomena of weather formation are unexplained comes much closer to reflecting the current state of our knowledge on the subject. For example, Warburg writes in his *Experimental-Physik* [Experimental Physics] (24th Edition, 1933, p. 222):

"In fact, lightning is an electrical current by means of which an electrically charged cloud, i.e. a thundercloud, is discharged . . . . It is (not possible) to say with certainty what is the origin of this electrical force field over the surface of the earth."

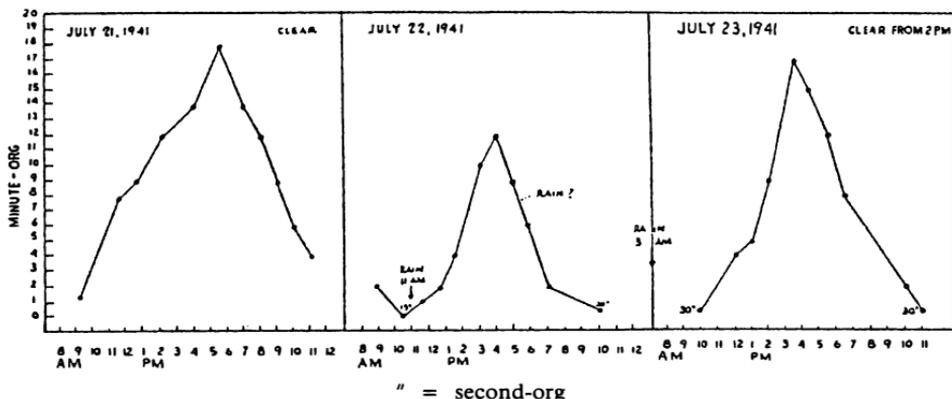
Drawing on the fundamental properties of orgone energy which are known to us, let us now see if they can explain any weather phenomena and, if so, which ones.

There is an old rule among farmers which states that, before it rains, the mountains appear to be close by and clearly visible, without any haze. On the other hand, on fine days, which are not followed by rainfall, the mountains are shrouded in a blue-

grey "haze" which gives them an overall blue-grey appearance. The mountains seem to be far away. We stumble here over the word "haze". This haze is blue-grey in color. However, water vapor is opaque, and when it builds up as early morning mist over valleys it is grey and not blue-grey in appearance. We know that orgone is blue-grey and that water absorbs orgone. The blue haze in front of the distant mountains could therefore be water vapor *containing orgone*, which disappears prior to the onset of rainy weather.

This fact coincides with two other phenomena which are derived from electroscopic discharge rates. The attached graphs show three basic types of actual fluctuations in the atmospheric orgone energy tension: On a clear sunny day followed by another clear day; on a clear sunny day followed by a rainy day; and finally on three successive days with varying sunny and cloudy conditions but *no rain*.

The first graph was plotted on July 21, 1941 in Oquossoc, Maine. We can see that until about 5:30 p.m. the electroscopic discharges increased in a more or less uniform curve, i.e., they took place *more and more slowly*. From 5:30 p.m. to 10 p.m. the curve declines again in a uniform manner and the elec-



troscopic discharges occur slightly more rapidly as measurements are carried out each hour. On July 22 and 23 the weather was sunny and clear. The type of curve is the same on both days,

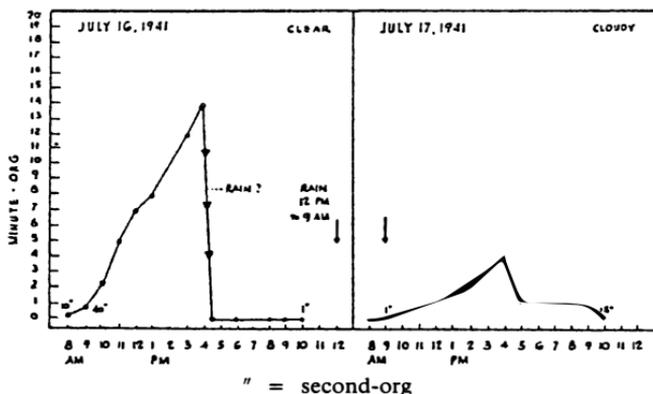
except that a small amount of precipitation occurred on July 22 at approximately 8:30 a.m. during a brief period of ten second-org tension. No measurements had been taken the night before, so it can only be assumed that the tension had declined. We can deduce from these curves that throughout the day the orgone is uniformly distributed in the atmosphere; there are no differences in the concentration. On the other hand, the uniform rise and fall in the daily curves indicates that the density of the orgone generally increases and decreases everywhere. Until 5:30 p.m. orgone levels build up in the atmosphere and they become "thinner" again as the sun sets. The decline in the rate of electroscopic discharge in the hot hours around midday runs counter to the view that the energy involved is electrical, because if the more intense solar radiation is supposed to bring about a greater accumulation of electrical energy in the air, the electroscopes would discharge *more rapidly* and *not more slowly* during the midday hours. In order to explain the curve in the first graph, it would be nonsensical to assume that the amount of electricity contained in the air is greatest in the early morning and late in the evening and drops to its lowest level at midday when the sun is at its strongest. On the other hand, these measurements coincide with the differences in orgone tension measured inside and outside the orgone accumulator.<sup>1</sup>

*The orgone concentration in the air depends directly on the intensity of the solar radiation.* This is also confirmed by the sharp rise in the temperature difference  $T_0 - T^2$  measured in the ground and the fact that the weighing pan drops.

The second graph presents an entirely different picture. On July 16, 1941, the weather conditions at Oquossoc, Maine, were clear and sunny all day, just as they were on July 21. But, in this case, after a steady rise in the curve until 4 p.m., we see a *rapid* and *complete* drop from 14 minute-org to 10 second-org within a period of half an hour. After that, the orgone tension curve no longer rises but fluctuates at the 10 second-org level

<sup>1</sup>An enclosure constructed of alternating layers of metallic and non-metallic materials so as to accumulate orgone energy. [Eds.]

<sup>2</sup> $T_0 - T$  refers to the difference between the temperature in the orgone accumulator and in the surrounding atmosphere. [Eds.]



until late in the night. *Eight hours after the sudden drop in the curve a heavy rain shower occurred which lasted all night and the following day.* At 8 a.m. on July 17 the atmospheric energy tension was only around 1 second-org. It remained at this low concentration until 10 a.m. and then rose to the amount of 4 minute-org at 4 p.m., while from 5 to 9 p.m. it dropped back to 1 minute-org. This means that *orgone energy disappeared from the vicinity of the electroscope, i.e., from the areas close to the ground, at about 4:30 p.m., and then reappeared at midnight in local concentrations at higher levels as charged storm clouds.* As the atmosphere clears, the original uniform and denser concentration of the orgone reappears and this is reflected in correspondingly higher daily curves.

Alternatingly sunny and cloudy weather prevailed on three successive days from August 1 to 3, 1941. The daily fluctuations of the orgone tension are irregular. In each case, there was a sudden drop of tension which does not occur on consistently sunny days. At the same time, or soon after this drop occurs, *clouds form.* The curve always rises when, or slightly before, the sun breaks through; and it always drops when the skies are already cloudy or clouds form.

Taken together with all the other observations, there is only one interpretation which satisfies all these phenomena: *The formation of clouds goes with the removal of free orgone from the lower layers of the atmosphere.* The tension curve must therefore *drop* because the concentration is reduced at the surface of the

earth. In addition, once the cloud has formed it necessarily blocks the orgone radiation emanating from the sun and prevents it from reaching the lower layers of the atmosphere. The atmospheric orgone tension curve thus remains low; in fact, it may even continue to drop. But it never drops as low as it does before heavy, long-lasting downpours. If the clouds are scattered again by the wind, or by other factors, the tension curve rises until it reaches approximately normal values. The solar orgone radiation can once more penetrate to the deeper atmospheric strata. The atmospheric energy tension increases.

This correlation between the fluctuations in the tension curve and the appearance or disappearance of clouds permits us to draw the following conclusion:

The occurrence of clouds indicates that the orgone from the lower strata of the atmosphere has concentrated, together with the atmospheric water vapor, at a point higher up in the atmosphere. The hotter the sun's rays, i.e., the steeper and higher the preceding rise in the atmospheric orgone tension curve, the faster a local concentration of orgone can build up, clouds can form, and rain will fall. When a thunderstorm erupts "out of the blue," this is due to a *sudden local concentration of orgone plus water vapor*. We know that orgone is quickly and easily absorbed by water because any kind of orgone-charged material can be discharged by wetting it. The orgone-charged water particles in the air flow toward each other and merge. As a result, the water particles condense and grow larger. Rain starts to fall when the fused water particles become too large to remain in suspension in the air.

The assumption that the water vapor condenses in higher, "colder" strata of the atmosphere appears incorrect to me because on hot summer days clouds will form in warm layers of air close to the surface of the earth. Indeed, mountaineers climbing on hot summer days know that up to altitudes of 3,000 or 4,000 meters, the air temperature remains practically the same, and, if anything, it tends to increase. On the other hand, clouds form in much lower regions of the atmosphere. When we stand on the peaks of high mountains, we look down on a sea of clouds far below us. Consequently, low-temperature

condensation of water vapor cannot be the factor responsible for cloud formation.

But nor can it be electricity which builds up in the water content of the clouds. Rainwater contains absolutely no mineral salts; it is "soft" compared with the "hard" salt-laden water found in rivers and seas. It is difficult to imagine how electrical charges should build up in salt-free water because such charges can only attach themselves to atoms in the form of ions. The water itself is not dissociated into H and O in the cloud and it cannot therefore be the carrier of electrical charges. And it is totally inconceivable that the cloud has a "positive electrical" charge because then the positively charged H would have to dissociate from the O. There could not be any rain, because rain consists of neutral H<sub>2</sub>O.

The assumption that electrons *attach themselves* to water particles also fails to stand up to scrutiny because, first, it is highly improbable that such attachment would take place; second, in that case the water particles in the clouds would have to be *negatively* charged. They could not be positively charged because then there would be no lightning, since it is assumed that the earth is also negatively charged. Or is it possible that positrons become attached to non-dissociated water particles? In short, *the entire concept that clouds carry a positive electrical charge is incorrect and confused.*

On the other hand, the fact that water absorbs orgone avoids such contradictions. The impossible assumption that isolated positive electrical charges occur in non-dissociated water can then be replaced by the theory that *water particles bearing qualitatively identical charges are attracted to each other.* This is a process which coincides with the basic properties of the orgone. Each cloud in itself forms an *orgonotic system* made up of orgone-charged water particles which fuse. The clouds associate, flow together, and merge. In the process, the orgone charges become concentrated.

Once two or more clouds have merged, the differences in size and density are lost in a more or less uniform blue-grey mass. If lightning was emitted as the individual cloud systems merged, the lightning gradually ceases as the sea of clouds becomes a

uniform mass, i.e., there are no longer any individual organotic systems which can combine with each other while generating flashes of light.

Thick, heavy storm clouds have a deep grey-blue color which is not imparted by the blue of the sky. The blue sky behind the clouds is in fact obscured, and the clouds are too dense to allow us to see it. *The grey-blue of the thunder clouds must therefore be due to their orgone charge.*

We are now in a position to understand, without any difficulty, not only the phenomenon of sheet lightning but also the lightning flash occurring between two cloud systems. If the cloud empties its water content onto the ground, the orgone charges are released. Before the orgone energy is uniformly distributed throughout the atmosphere and fine weather conditions are restored, differences must exist here and there in the concentration of the free orgone which are equalized by the development of strong lightning flashes. Sheet lightning is fundamentally nothing more than an extremely intense manifestation of the normal flashing of orgone energy which is visible in the dark sky on clear nights. It is thus not a separate and peculiar phenomenon which occurs only under special circumstances. In fact, we can say that the phenomenon which we call sheet lightning is taking place all the time, but at such a reduced level of intensity that we cannot discern it with the naked eye during the day, and at night we need to use the organoscope in order to see it. With equal ease, we can explain the flash of storm lightning between two clouds as the transfer of energy between two organotic systems as they come into contact with each other. The difference between sheet lightning, which spreads across the sky, and the flash of lightning which takes place in a thunderstorm is determined solely by the extent to which the orgone is concentrated per unit volume of space. The lightning flash corresponds to the development of extremely large quantities of orgone within a very small space. *Sheet lightning corresponds to the equalization of differences in the orgone concentration over wide areas of the atmosphere.*

A lightning flash between a cloud and the earth obeys the same law: The earth is one orgone system and the cloud is the

other, *smaller* system. It is no longer necessary to assume that the two systems are oppositely charged. We already know that the orgone has the property, which is not shared by any other form of energy, of creating a large concentration by attracting small quantities of orgone. The orgone energy of the earth thus attracts the orgone energy of the cloud in the same way that a large cloud attracts a small one. Flashes of lightning thus occur between clouds and the earth in the same way as between two clouds. The amounts of energy involved are enormous. According to available calculations, each lightning flash contains millions of volts. This reminds us that our static electroscope, which we can charge easily with a single stroke of our hair, requires several hundred electric volts to be charged to the same level. There is thus agreement between these two sets of facts. *It cannot be electricity but rather orgone which operates in thunderstorms.*

The process of cloud formation has taught us to recognize *two opposite functioning directions* which we may refer to as the antithetical states or functions of the orgone. The *densening* or *concentration of orgone* is contrasted with the *thinning* or *dissociation of orgone*. We will come across these two orgone functions again in the sphere of the living.

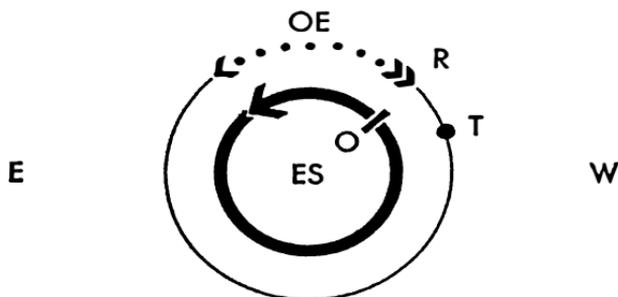
## THE FORMATION OF THE GAP IN THE ORGONE ENVELOPE OF THE EARTH

The *movement* of the atmospheric orgone, i.e., of the orgone envelope of the planet earth, is also linked with the formation of clouds. In my provisional report<sup>3</sup> on the demonstration of a physical orgone phenomenon, I described, among other things, the west-east direction of movement of the atmospheric orgone. This undulating motion is easy to observe with a good telescope capable of magnifying 60 to 180 times. When clouds begin to form in the west, the normal west-east motion is reversed and runs from east to west. There are several distinct

<sup>3</sup>Presented in the spring of 1946.

phases in this reversal. The west-east motion at first slows down, then stops, at which point the orgone movement is no longer visible. Soon after that the direction of movement is reversed to east-west. Once the rainfall is over and the weather has cleared, the movement returns to its original west-east direction.

If the reversal of direction lasts several days, with bad weather prevailing all the time, then the clearing phase is sometimes followed by a strong wind blowing west-east. The following assumption seems best able to explain this wind. Obviously a "hole" or "gap" is created by the reversal of the direction of motion at the point where the eastward-moving part is separated from the westward-moving part.



E = East

OE = Orgone envelope

O = Observer

ES = Earth's sphere

W = West

R = Reversal to E → W

T = Thunderclouds

«.....» "Thinning" of orgone envelope

In this way, the orgone envelope thins out at the point of separation between the west-east and east-west directions. The reversal in direction itself is easy to understand. *Since the stronger orgone system always attracts the weaker system, the clouds attract orgone from the surrounding areas*, thereby increasing in size as more water vapor is concentrated. The "gap" is revealed by the electroscopic reaction. The discharges of the electroscope accelerate to a few units of second-org, which corresponds to a low concentration of orgone.

We therefore find that four major functions of rain formation coincide:

1. A drop in the temperature difference,  $T_0 - T$ ;
2. An acceleration in the electroscopic discharges down to the level of one second-org;
3. A reversal in the direction of motion of atmospheric orgone in the areas to the east of the cloud formation;
4. Cessation of the spontaneous oscillations of the pendulum; disturbances in the Geiger-Müller reaction until it completely disappears.<sup>4</sup>

These phenomena are functionally linked and point to the formation of the *orgone gap* as a result of the densening of atmospheric orgone in the bank of clouds.

I do not have anything more to say about the problem at present. But it is quite clear that a door has now been opened for much more detailed studies to be performed on the formation of weather conditions.

<sup>4</sup>Cf. Reich, *The Cancer Biopathy* and *The Oranur Experiment*. [Eds.]

*Did you see the other night how the sheet lightning was like the phenomena in the darkroom? Alternating soft long flashes with sudden sparks of light? It's very important to observe the same natural phenomena that you see in the laboratory outside in nature.*

Wilhelm Reich

## *The Attitude of Mechanistic Natural Science to the Life Problem\**

The investigation of biological energy not only collided with the obscurities of the life problem, it also, again and again, encountered very curious reactions from physicians, analysts, biologists, physicists, etc., which at first sight appeared to reflect nothing more than the world's rejection of contemporary discoveries. It would be so much easier if we could explain the hostility shown toward our work by simply pointing out: "That's the way it has always been." Has not every new discovery been disavowed, totally ignored, or attacked? Is it not the case that pioneering scientific work has always had to suffer? Have not scientific pioneers always had the reputation of being charlatans, dreamers, fakers, and psychopaths? It would seem appropriate to accept this inevitable fate.

But such argumentation is highly questionable. Research in newly developed fields is already fraught with enormous difficulties, and it is hard to see why the specialists always set out to jeopardize and destroy that research, instead of joining in the process of making discoveries and *learning something new*. Until now it has been left to later generations to blame "narrow-mindedness", "resentment", and "material interests" for such events. But, instead of waiting until after the fact to gain such insight, it ought really be possible to see the truth right away and to adopt a decent attitude toward contemporary discoveries. There is an element of contempt contained in the fame which is bestowed on bold pioneers long after their wearisome struggle is over, when their sufferings are ended, and the public at large is effortlessly enjoying the fruits of their travail. Recognition, which always comes too late, has much more to do with business decisions than with the intention to treat pioneering work better

\*Written November, 1941. Translated from the German by Derek and Inge Jordan.

the next time around, that is to say, to promote and encourage it in its difficult period, instead of jeopardizing it. It would be very nice to do without the sadistic pity which our descendants show for the shattered trail-breaker. The same characters who, as contemporaries, stick their noses in without being asked and mess things up, tend to be the ones who later effortlessly benefit from the fruits of other people's victories.

Over the course of the past harsh years, the vicious attitudes displayed by so-called "authorities" and critics have revealed common features and a meaning which are too important to conceal.

Just imagine that a stone, which had been lying quietly on the ground, suddenly started to move, to stretch, and to quiver. People's involuntary reaction would be horror and fear, as if a poisonous snake had suddenly appeared on the scene. The subject of each new discovery is in itself "alive", i.e., it *functions*, but it is invisible, rigid, and dead to the eye of the normal observer. The essence of discovery is that one makes visible what is unseen; the apparently immovable starts to move; what is rigid now functions; *lifeless matter comes alive*. It is quite understandable that the fears of a naive world were directed on a massive scale against bion research in particular. After all, this research had revealed that inorganic matter changes into living, motile "energy vesicles", or "bions", by heating it to high temperatures. That is to say, life owes its origin to fire. The actual facts are thus not all that far removed from the stone which started to move. For the organomic physician or pedagogue, it is a trivial, everyday fact that human beings are the only living species which, because of cultural illusions and the mechanics of civilization, have suppressed, outlawed, and rendered unconscious the autonomous life process that exists within them. Therefore, modern man, for all his innate yearning to understand the functions of life, is characterized by his overwhelming fear of its pulsating living nature. His fear of flowing vegetative plasma, in other words, his *fear of involuntary movement*, which dominates modern man, is well-known to us from a wide range of clinical observations. To eliminate this fear is one of the main tasks of our physicians and educators. The motives which are

customarily given for the malicious attitude displayed towards discoveries, now appear trivial and of secondary importance. *The irrational reactions are only manifestations of the gigantic fear engendered by movement in something which, to the senses, does not appear to exist or is non-motile.*

This contradiction in biologically rigid man's attitude toward the life process explains the contradiction in his behavior. Human beings expect the desired paradise to be conjured up immediately and without effort. Naturally, nobody is capable of that and the result is disappointment or bitter hatred. We are met by deep-rooted fear and a degree of rejection which give psychiatrists much to think about. The only thing that forces us to comprehend these human reactions and to find ways of countering them is the fact that we wish to continue and secure our work. Naturally, we cannot comfort ourselves with the thought that our work will "some day and somehow win general recognition". Our work is neither other-worldly, like that of the church, nor futuristic, as some people would like to make it. Instead, it is rooted in the here and now, in a *practical* way. We do not wish to wait until the existence of the orgone is finally acknowledged, fifty or a hundred years from now. It is up to us, and not to any "authority", to demonstrate the existence of biological energy now, at this point in time.

Our work suffers from the fact that those people who are unfamiliar with natural sexuality believe that they see in us a confirmation of their own lasciviousness and perversion. They therefore treat us with a strange mixture of curiosity, bad conscience, and the fear that, by coming into contact with us, they will become "socially unacceptable". We did not invent sexual filth; indeed we fight vigorously against it. But we do have to bear the consequences of the fact that today's sexually enslaved person is unable to distinguish between genuine, natural love and secondary, perverted drives. One of the greatest problems we face is that our biophysical research is derived from our disclosure of the orgasm function. Everyone suspects that "love" is a fundamental, natural phenomenon within the sphere of life. But, just imagine that a member of the French Academy of Sciences were to give a lecture on impotence in men and women

in a manner which was just as serious as if he were talking about circling electrons. I do not believe that anybody who has managed to overcome the psychic misery of mankind could ever become a member of any of the present academies. It is true that the circling electrons are extraordinarily important, but it is my assertion that what mankind expects from responsible scientific circles is a solution to the problems of impotence, to marital and family difficulties, to the question of bringing up children, of experiencing nature, etc. Yes, let's say it clearly, fear of the living also disrupts the scientific researcher's ability to think. It should be mentioned here that Freud, the founder of scientific psychology, never received a Nobel Prize, although every average inventor in the fields of physics or chemistry was happily and cheerfully awarded this honor. But nobody would deny that Freud's contribution to the understanding of how mankind conducts its life is infinitely more important and more far-reaching than the "spinning of electrons". The conclusion is inescapable that, in addition to their rational function, another function of the highly esteemed theories about electrons is to divert attention from those things which, in popular terms, tug at the heart and genitals of every inhabitant of this planet. Physics and chemistry regard themselves as "pure" sciences which makes it impossible for them to have anything to do with such "dirty" things as erotic feelings. Therefore metaphysics and pornography flourish side by side.

It was emotional plague which delivered Galileo into the hands of the Inquisition, led Copernicus to die in misery, made Leuwenhoek into a hermit, drove Nietzsche mad, and forced Pasteur and Freud into exile. It is an indecent and unworthy attitude, which contemporaries have displayed through all the ages. It has to be said clearly and uncompromisingly: We should never yield to such manifestations of the plague.

But these "academic attitudes" (we should really call them *panic reactions*) bring their own bitter rewards. Since natural love and the autonomous life process are fundamentally identical, the fact that the sexual question has been barred from the scientific academies of this planet has blocked access to central scientific issues. Pathology and medicine suffocate in a

mechanistic process of carving up *dead* organs and never come near the living function of the entire organism, because this function smells of sexuality. Although physics and mathematics have devised cosmic systems, the orgone energy which we breathe, which twinkles in the sky, which determines the sexual act and guarantees propagation, which throws light on biogenesis, and will probably reveal that many of our physical fantasies about space are totally unfounded, has been so completely ignored that one has to ask oneself how this was possible. Our academies feel themselves to be so superior to life, and their language has become so complicated, so divorced from reality, so estranged from the facts, so vain and fundamentally untrue, that they have not only lost contact with the real life process, but they also operate like a machine designed specifically to *block* research into the life process by every means available.

For this reason, the young, rising generation of scientists feels dissatisfied and frightened. It can easily be proved that any simple, honest, upright citizen of this planet is familiar with the fact that cancer is a disease which has its origins in the destruction of our autonomous life functions by the forces of civilization. To say that cancer is a decay process taking place in the blood and tissues is too simple, too unacademic, too banal a fact to be accepted by thousands of cancer researchers. Enormous amounts of money are spent to carry out highly complicated and superfluous experiments and develop theories, all for the sole purpose of disguising the fact that cancer cells are protozoal life forms which organize themselves from biologically spastic and asphyxiated tissue. In the middle of the 20th century, thirty years after Freud, surgeons are penetrating with their scalpels deep into the tissue of the brain in order to "influence" the psychic functions. About forty years ago it was discovered that cardiac neuroses are the result of pent-up sexual excitation in the organism. Nowadays, forty years later, highly respected physicians are forbidding patients who suffer from cardiac neurosis to engage in sexual intercourse. This advice is based on the false assumption, which only serves to reinforce the neurotic patients' phobia, that sexual intercourse is "dangerous" in the case of hypertonicity. In brief, medicine and natural science ig-

nore the living and, despite all the trumpeting, these disciplines remain deeply mired in the sludge of mechanistically inhibiting thought processes.

The functions of the living would have been discovered long ago with the wonderful tools of technology now available to scientists, if those functions had not been embarrassingly identical with the natural sexual functions, if the concept of God had not been the same as the sensation of orgasmic excitation in the autonomous life system, and if neuroses had not been generally endemic as character deformations. In the last issue of the Encyclopedia Britannica there is still no mention of the word "orgasm", although in this or that form it is undoubtedly the source of dirty jokes at polite afternoon tea-parties and in private rendezvous. Worthless, petty-minded practitioners of science and politics still dare to make fun of Freud. Biology in the 20th century uses a whole arsenal of complicated formulae, which are incomprehensible to the ordinary mortal, but not one textbook contains the slightest mention or description of vegetative movement and convulsion, because these remind us of the orgasm reflex. The only explanation for the fact that so many physicists and biologists are religious, in the bad sense of the word, is that, for all their academic learning, they are deeply dissatisfied with their work. A tribe of Indians who partially bury their sick in the ground, so that the life energy of the soil can have a healing effect on them, is in closer contact with life and its dependence on natural processes than our entire chemical pharmaceutical industry, which is governed solely by money interests.

This list of facts could be continued *ad infinitum*. I have mentioned them not because I believe I can change the situation, but solely because this ossified, mechanistic, lifeless academicism, divorced from reality, pretends to be the great "authority", as if it were capable of deciding whether bion research and the sex-economic theory of the autonomous life function is right or wrong. After my first clash with this brand of science, which is paralysed by panic, I felt duty bound to make it clear to my staff that there is no authority in our field of work, and nobody has the right to criticize us without first having acquainted him-

self with the subject matter. All of this would be insignificant were it not for the fact that neurotic representatives of this brand of science have set out to jeopardize and destroy our painstaking work. Where arguments fail, rumors tend to take over. People are curious, but they go to great lengths to avoid any simple and direct contact with my laboratory. Instead, they go on fact-finding trips. It is absolutely true that Norwegian "authorities" sent emissaries to London to talk to Malinowski, and to Paris to see Bonnet, and to Nice to meet with Du Teil, all in order to find out what I was actually doing. Presumably the trip to my laboratory in Oslo would have been too long and arduous. Whatever the case, a lot of interest was shown, and is still being shown. And I do not want to disappoint the curious. The only response that I have for improper behavior is to throw a strong light on the facts.

The relation of the various specialist organizations to our work is extremely confused. Psychiatrists seem incapable of understanding the biological underpinnings of their field. This leaves the impression that psychiatry did not want to be responsible for comprehending the body-soul problem, or seeking to correct the biological functions in man. Psychoanalysts, in turn, praise me as "once having been" a good analyst. They also admit that they have learned a lot from me, but they regret that I have "strayed from the path". They "accepted" my character analysis, after having made "the necessary changes", i.e., *after deleting the orgasm theory*. But, in their opinion, the work which I have done in recent years is mad, or at least incomprehensible. They were unable to grasp that Freud's psychoanalysis has now been given a solid biological foundation and no longer hangs in the air without scientific backing. This was accomplished in the very decade in which psychoanalysis suffered an organizational splintering because such a foundation was lacking.

On the other side, there are the biologists, physiologists, and internists; they do not have the faintest idea how to handle sexual psychology. They are totally untrained in sexology and in questions relating to the dynamics of drives, so that their reactions to bion research are not corrected by any insight into the evolution of the problem. Nevertheless, the link is very simple

and actually banal. *Orgasm is a nodal point in living events. Therefore, of necessity, orgasm research had to strike roots in biophysics.*

And then there are the economists and sociologists. Sex-economy has made substantial and recognized contributions to our understanding of irrational events in politics and society. But our economists and sociologists are so trapped in the mechanics of numbers and in a rationalistic, 19th century way of thinking that they are completely helpless and naive when faced not just with any kind of scientific psychology, but also, of course, when they come up against the irrational events of our time. All they do is classify, with a great show of dignity, that what just happened is what is happening. And I don't even want to talk about the political saviors of mankind. Their knowledge is in inverse proportion to their redemptive gestures.

We thus find ourselves in a painful, even dangerous situation. At first, naively, then, consciously, we have grasped at the roots of living events, but even we ourselves do not yet know what consequences will evolve from comprehending the dynamics of biological drives. We see ourselves growing more and more isolated from the acknowledged and common ways of thinking, which have dragged human society into the abyss; we have grown alienated from them and they from us. Still, it sometimes seems to us as if here and there we understand some of this thinking and reacting, even though the dynamics of life are not understood. We often resist discovering the irrational in serious researchers, but we are forced to seek and find the irrational in ourselves on a daily and hourly basis in order to be able to do our work and carry out our research. It is therefore impossible to see why other branches of science, such as physics, chemistry, or sociology should be protected from being examined to determine the irrational content of their statements and research methods. Physicists, chemists, and sociologists are no more and also no less neurotically contaminated than other ordinary mortals.

Those of us who come from the field of depth psychology have always been the target of something like contempt because the "pure" sciences do not regard psychology as an "exact"

science. However, I not only wish to claim that psychology has now obtained this exact, experimental foundation, but I say also that those people are right who repeatedly stress that continued research based on Freud's discovery will one day decide the fate of this world. All the development which has taken place in the mechanistic sciences and in the technology of civilization has not brought us one iota closer to understanding the emotional plague which afflicts mankind. This development has also shown us that it is incapable of solving human or, in other words, social problems. For all the spinning electrons, and the expanding universe, and despite all the bombardments of atomic nuclei, our children are still martyred and psychologically crushed on a daily and hourly basis; living tissue contains cancerous rot; millions of people are killed for no apparent reason, with no discernible purpose or sense; pederasts and impotent hysterics can decide whether and when millions of people lose their homes.

Permit me to express my conviction that the discovery of the biological energy, which underlies our perception of life, our organ sensations, our actions, our religious feelings, and our cosmic fantasies, will provide a solid scientific basis for the process of creating culture. As a result, many pillars of the mechanistic world view will collapse and new acts of natural philosophical thought will fully reveal the dynamic, the energetic, the *living* in natural events and allow them to impact on society.

If we want to carry out our work and if we are not to fail, we must finally be clear on our position in the scientific world in two respects:

1. There is no authority in the field of sex-economy and orgone biophysics except the authority which has been won by work and achievement in these fields.
2. Sex-economy and orgone biophysics are not medicine or even psychiatry. They are special, scientific disciplines which reveal new facts in the fields of medicine and psychiatry, but also pedagogy, physics, and biology. Sex-economy is a new branch of science equal to all others. It is an autonomous discipline, regardless of whether or not this autonomy is acknowledged by

an engineer, physicist, biologist, psychologist, or physician. In order to be autonomous, sex-economy must first recognize its own autonomy. But such an accomplishment is inconceivable without a clear and radical insight into the motives which so far have prevented people from understanding *what life is*. Orgone energy establishes the reality of those life sensations (visible as signals on the oscillograph) which mankind has for thousands of years referred to as "God". Orgone energy is indeed "omnipresent". It is actually responsible for life's existence. It is indeed a cosmic type of energy and is at the basis of some of the characteristics which are highly valued by true religion.

At this point, I must correct and withdraw some of my earlier judgments about religion. Along with the Marxists, who can think only in rationalistic terms, I once believed that religion was a deliberate invention by the ruling class to suppress the lower orders of society. I once believed, with the psychoanalysts, that religion is an obsessional neurosis and that religious sensations are not genuine, i.e., that there is no such thing as "oceanic feelings" or "cosmic sensations". I believed that religion, and everything that goes with it, is an "illusion". Now it has been established beyond doubt that brutal ruling forces have made use of the existing religiosity of the masses in order better to suppress them. However this does not mean that the predominant interests of money or political power created or generated these religious feelings in the masses. There is also no question that most religious concepts are illusionary, in the sense that we regard the concepts of God, sin, Savior, and the restoration of life after death as unrealistic. But none of these circumstances alter the reality of religious and cosmic feelings, however such emotional excitations may express themselves in people's thinking. Even though there is no personal God, there is nevertheless and without doubt an extremely powerful sensation which causes mankind to believe in the existence of a personal God. If we make a sharp distinction between the *thought content* and the *conceptual world* of religion, on the one hand, and the *religious emotions*, on the other, then to the former we must assign the character of unreality, and to the latter the character of a *decisively important* reality.

Humanity has obviously been aware of the existence of biological orgone energy in the form of religious and ecstatic sensation. All genuine creation myths have handed down to us the image of a cosmic (supernatural) force which created the world and humankind and controls them. Since he was unable to grasp and master this force, man could only feel himself to be its object, or product and plaything, to which he abandons himself and by which he is not only controlled, but also *enjoys* being controlled, because orgone energy functions biologically as *pleasure energy*. This explains the tremendous willingness to give oneself over to religious sensation and to be controlled by it. Until the discovery of the orgone and the vegetative currents, the world of organ sensations was not merely disavowed, it was excluded from all scientific discussions. The functions of life energy are directly expressed in the subjective experiencing of these organ sensations and they are at the basis of human-mystical techniques, such as yoga trances, the ability of fakirs to voluntarily influence the involuntary life functions, the irrational assertions of astrology, and, of course, fascist irrationalism. But also, they are at the basis of folk dances and folk songs, of music in general, and of the dreaming of great discoverers and the philosophy of great poets and wise men. The discovery of the cosmic life energy, which functions before the very eyes, noses, and ears, and within the senses and nerves of researchers, was probably impeded by this passively submissive attitude on the part of the living organism known as "man". More than that, what nowadays rules the world and has power is alien and hostile to the cosmic sensation of living beings, as if it were specially designed to suffocate life. Let us therefore be on guard against this human attitude.

As long as men believed that disease is caused by evil spirits, they were unable to rouse themselves to take action against it. In order to discover orgone energy, it was necessary to overcome the fear of something which is endowed with spontaneous motion and to which we owe our being. To take control of this something, it was, above all, necessary to comprehend scientifically the autonomous organ sensations which Bergson so brilliantly described as the sensation of permanence in the self.

The ban placed by religion on “knowing God”, and the religious belief that we can only behold him by sensing Him, must be regarded as *a fear-based, self-imposed prohibition of living organisms, as a taboo, preventing us from gaining access to the origin of life.*<sup>1</sup> Therefore, any serious attempt to make such a discovery is regarded as a sacrilege. It is as if there were a temple in this world inside which all human beings would dearly love to look. Great human beings have sacrificed their lives in order to fathom its enormous secret. But anyone who dares to penetrate into the inner sanctum and lift the veil will be stoned by his fellow human beings because he dared to violate that sanctum. It is the same with regard to orgasmic excitation: everybody wants to experience it, but nobody wants it to be spoken of. These seem to be the reasons why the atmospheric and cosmic orgone was not discovered and why mechanistic science behaves *in a highly irrational way*, to the point of running amok, as soon as it comes into contact, in any shape or form, with the problem of the autonomous movement of living beings, with organ sensations, and with the autonomic orgasmic plasma convulsion.

<sup>1</sup>Reich added the following in longhand: “The emotional plague is responsible for this.”  
[Eds.]

