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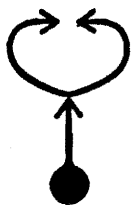
Love, work and knowledge are the well-springs of our life. They should also govern it.



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International Journal of Sex-Economy and Orgone-Research

VOLUME 3, NUMBER 1 MARCH 1944

FROM THE ORGONE AND CANCER RESEARCH LABORATORY

THERMICAL AND ELECTROSCOPICAL ORGONOMETRY

The Discovery of the Orgone, Part 2*

By WILHELM REICH, M.D.†

CONTENTS

INTRODUCTION

In the first part of this report† I related how I discovered the orgone energy and how it can be made visible. In the present report I shall describe the methods of quantitative measurement of the orgone by means of the electroscope and the thermometer. In the course of this presentation, we shall meet not only fundamentally new facts of physics but also some peculiar relationships between the orgone and weather formation. The results here presented have been checked now over a period of 4 years.

1. TEMPERATURE DIFFERENCES

The metal walls of our orgone accumulator are "cold." If we hold our palm or tongue at a distance of about 10 cm from the wall, we feel, after some time, *warmth* and a *prickling* sensation. On the tongue, we perceive a salty taste. If we put a thermometer in the same place (or, better, above the top of the accumulator), and a second thermometer outside of the accumulator, we find to our surprise a difference of 0.2° to 0.5° C. as compared with the room temperature.

This can *not* be "heat" radiated by the walls of the accumulator. We do not understand this fact; we have to become accustomed not to want to understand individual findings outside of their context. Once we have found a significant connection between two or more findings, we are able to form a bit of theory. Whether that theory is correct or incorrect, complete or incomplete, can only be shown in the course of further work. If the theory is correct, it will inevitably lead to new findings and new connections. If it is wrong, it will inevitably lead into a wrong direction.

Since the temperature at the metal wall is lower than at some distance from it, the warmth which we feel at our palm and which the thermometer registers can-

* Translated from the manuscript by the Editor.

† *Cf.* "The Discovery of the Orgone," *This Journal* 1, 1942, 108-130.

not be heat as such radiated by the wall. There are, indeed, no sources of heat at or behind the wall, within or under the accumulator. We have to venture an assumption and see where it leads us.

As we know, radiation in general consists of *moving energy particles*. Let us assume for the present that the cold metal walls of the accumulator radiate or reflect energy. We must make the following assumption: When we put our hand or a thermometer at a distance of, say 6-10 cm from the wall, we *stop* the movement of the energy particles. *The stoppage changes the kinetic energy of the particles into heat which causes the feeling of warmth at the hand and the objective temperature rise at the thermometer.* This assumption is in accord with the physics of any radiation; for example, the stoppage of the electrons in an Xray tube, as they fly from the cathode to the anticathode, produces heat and light phenomena.

For our experiments, we build a small orgone accumulator. Six iron sheets of 1 square foot are built into a cube (*cf.* fig. 1, p. 3). At the outside of the top sheet we put a cylinder of about 15 cm length into which we can introduce a thermometer. A hole beside it makes it possible to read the temperature *within* the box. In order to insulate the inside of the cylinder against the influence of the room temperature, we surround the cylinder with cotton or another material with low heat conductivity. In addition, we screen the cylinder with a glass lampshade. No organic substance should be placed between thermometer and the metal surface.

The idea behind this experimental set-up is the following: The energy particles *within* the box are being thrown from metal wall to metal wall. They are being stopped on all sides. Since heat ascends, any possible temperature rise will be most readily registered above the top metal sheet. There must be a *temperature difference* between the enclosed air in the cylinder above the accumulator on the one hand and the rest of the room on the other. Let us call the temperature of the air in the room T, that of the cylindrical space To. If our assumptions are correct, the temperature difference (To — T) must be *positive* and *always present.*

Measurements over a number of days reveal a temperature difference between 0.2° and 1.8° C. Measurements taken several times a day over a period of weeks reveal an arithmetic mean of about 0.5° C. Since the box contains no constant source of heat, the temperature difference can be due only to the stoppage of the radiation. Let us summarize what we have learned thus far about the orgone energy:

1. Organic substances absorb the energy.
2. Metallic substances reflect it.
3. Stoppage of the kinetic energy by any metallic obstacle results in a temperature rise.

This calls our attention to an error in the construction of the box. The metal walls reflect the energy and the heat to the *outside* as well as to the inside. So, in order to provide an insulation against the surrounding air, we cover the metal box with organic material such as cotton. To hold this in place we surround it with a second box of plywood or celotex. The inside of the box is made accessible by a door in the front wall.

The outside of the apparatus consists of organic material, the inside of metallic material. Since the former absorbs the energy while the latter reflects it, there is an *accumulation* of energy. The organic covering takes up the energy from the atmosphere and transmits it to the metal on its inside. The metal radiates the energy to the outside into the cotton and to the inside into the space of the accumulator. The movement of energy toward the inside is free, while toward the outside it is being stopped. Thus it can oscillate freely on the inside, but not to the outside. In addition, part of the energy given

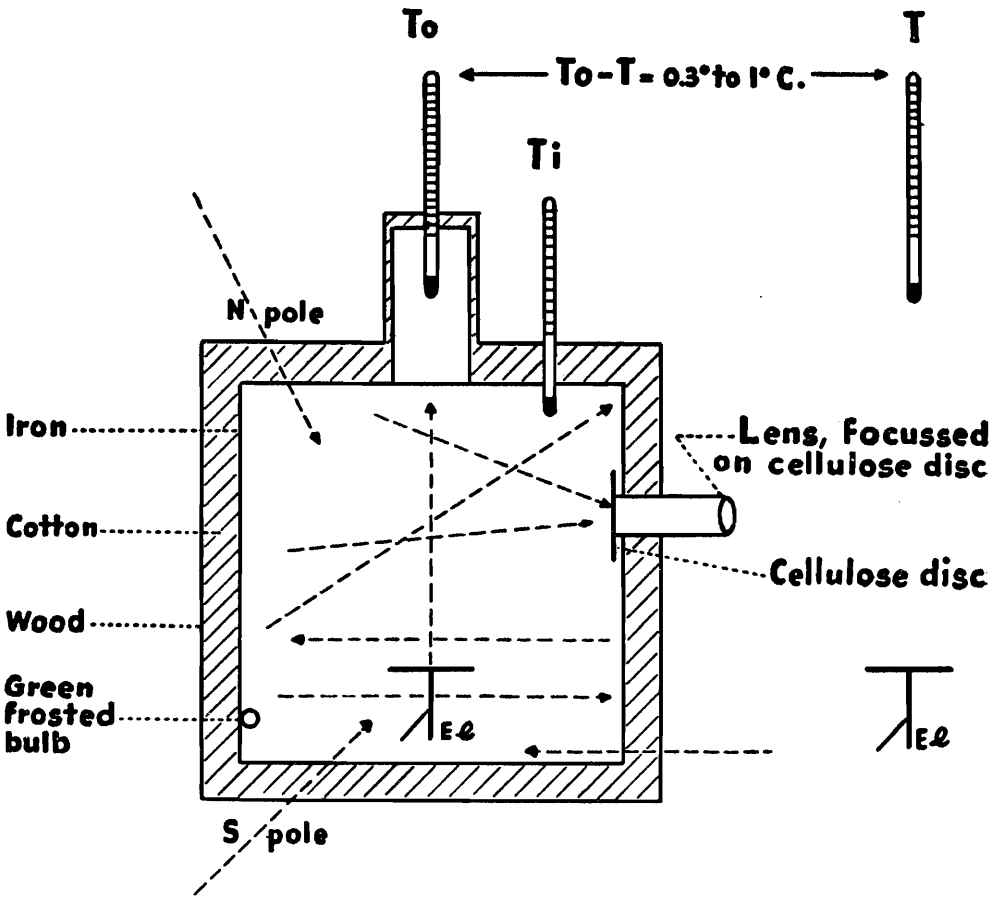


FIG. 1. Basic design of orgone accumulator. Section.
To = temperature above accumulator; Ti = temperature within accumulator; T = control (temperature of air in room).
El = electroscope. ——————→ = direction of radiation. Size: 1 cubic foot.

off by the metal toward the outside is absorbed by the cotton and given back to the metal. In which manner the energy penetrates the metal we do not know. All we know is that it *does* penetrate it, for the subjective and objective phenomena are far more intensive within the apparatus than on the outside.

After covering the metal with organic material we find that the temperature difference To — T is *more constant* and also *greater,* other things being equal. *We have built an accumulator which confines and concentrates the orgone.*

As a control, we make the same experiment with a box of the same size built of wood or cardboard only. We soon find that in such a box, temperatures are completely equalized: the temperatures are the same everywhere. The temperature differences appear only when the box is lined with metal on the inside.

Orgone measurement in the open air. During the summer months of 1940, I kept a small orgone box partly buried in the ground in my garden. There was a constant temperature difference. But not until the following February did I find out how much greater was this difference than that found in the closed room. On February 15, 1941, a sunny day with a strong cold wind, I buried an orgone box to the depth of two-thirds of its height in the soil. Thus the box thermometer (I)

was still *above* the soil level (*cf.* fig. 2, p. 4). The box, including the thermometer casing above it, was in a second box of cardboard; the space between the two boxes was filled with cotton and wood shavings; the whole thing was covered with a wool blanket. (The space in which the temperature is measured, of course, has to be well protected against the low outside temperature.) A control thermometer (II) was put through a hole in the bottom of a glass jar, and this was buried 4 inches deep in the soil, which brought the bulb of the thermometer *below* the soil level. A second control thermometer (III) was stuck about 1 inch deep into the soil, without any covering. This thermometer (IIIa) was also used for measuring the air temperature above the soil, at about the height of the box thermometer, with and without covering as protection against the wind. The drawing (fig. 2, p. 4) and the table on p. 5 show the arrangement and the results.

In this experiment, To — T showed a much higher value than in the inside room, probably because of the elimination of the secondary orgonotic radiation from walls, table tops, etc. *In the open air and without sun, the difference was about* + 2° *C.*

In order to make doubly sure, I continued the experiment overnight and during the following day, from February 16th to February 17, 1941, in the following manner: I left the apparatus in the open air without the blanket, that is, I let it get completely cooled by the low night temperature. At 9.30 A.M. on February 17th, the air temperature was — 1° C., the soil temperature 0° C. I put the cold blanket back on the apparatus and introduced the thermometer which had just registered an air temperature of — 1° C. into the cylinder on top. Soon it registered + 2.3° C., while the air temperature remained at — 1° C. and the soil temperature at 0° C.

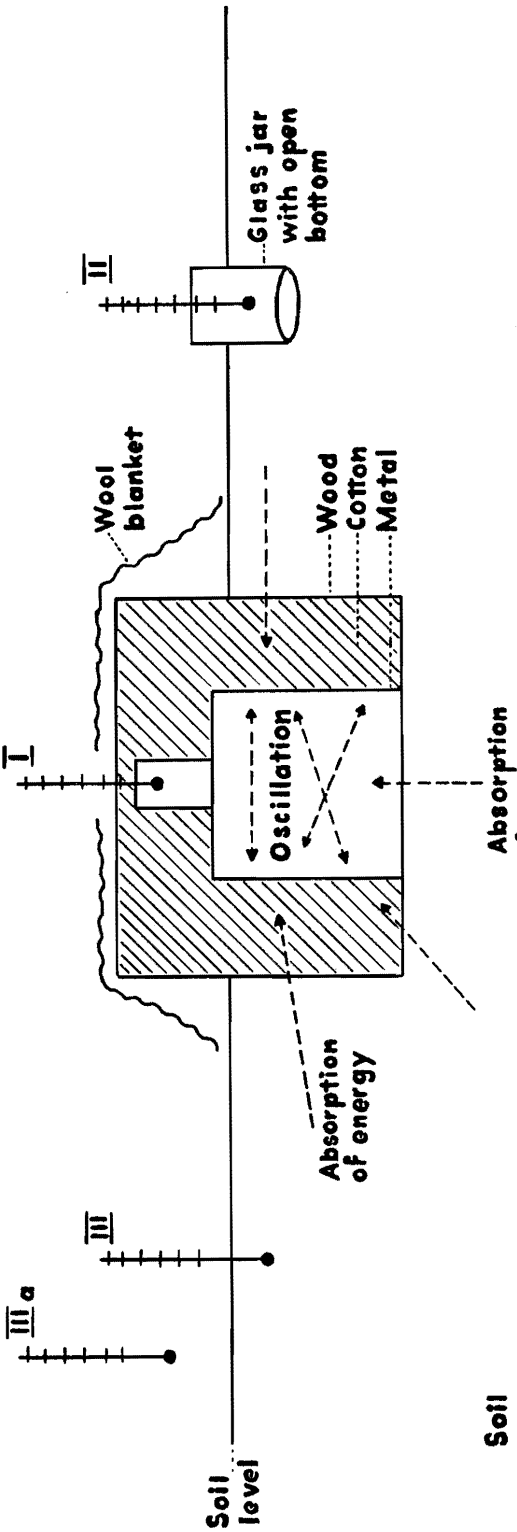


FIG. 2. Measurement of To — T in the open air.

Reading No.	*Weather*	*Time*	*Air*		*Soil*	*Air in Glass Jar*	*T-Org Above Soil*	*To — T Compared with Air*	
			Free	*Pro-tected*					
		2-16-41							
1	Clear; cold wind	12.30 P.M.	3.6°	5°	0.5°	1.5°	11.6°	+ 8°	Appara unde cept grou Noo
2	Clear; cold wind	1 P.M.	3.4°	4.6°	0.3°	1.5°	11.4°	+ 8°	
3	Clear; cold wind	1.45 P.M.	2.1°	3.5°	0.4°	1.3°	9.5°	+ 7.4°	
4	Apparatus in shade	2.30 P.M.	0.3°	0.6°	0.4°	1.3°	6.5°	+ 6.2°	Wool
5	Apparatus in shade	3.30 P.M.	0.2°	0.3°	0.3°	1.3°	2.9°	+ 2.7°	Wool Elimin
6	Apparatus in shade Freezing temperature	4 P.M.	— 0.6°	0.6°	0.2°	0.4°	+ 0.6°	+ 1.2°	Wool Effect
7	Apparatus in shade Freezing temperature	5 P.M.	— 0.9°			0.2°	0°	+ 0.9°	Wool Effect
8	Apparatus in shade Freezing temperature	12 P.M.	— 2.1°			— 0.4°	+ 1.7°	+ 1.7°	Measu wool
9	Cloudy	2-17-41 9.30 A.M.	— 1°	— 1°	0°	+ 0.7°	+ 1.8°	+ 2.8°	Appara over again
10	Heavy snowfall	11.30 A.M.	— 1°	— 1°	0°	0.9°	+ 2.3°	+ 3.3°	Therm each
11	Heavy snowfall	12.15 A.M.	— 0.9°	— 0.9°	0°	0.7°	+ 1.3°	+ 2.2°	
12	Heavy snowfall	1 P.M.	— 0.7°	— 0.7°	0°	0.7°	+ 1.3°	+ 2°	
13	Heavy snowfall	2 P.M.	— 1°		0.3°	0.7°	+ 1.2°	+ 2.2°	
14	Heavy snowfall	3 P.M.	— 1.1°		0.3°	0.7°	+ 1.2°	+ 2.3°	Therm
15	Heavy snowfall	4 P.M.	— 1.2°		0.2°	0.6°	+ 1°	+ 2.2°	
16	Heavy snowfall	5.30 P.M.	— 2°		0.1°	0.2°	+ 0.5°	+ 2.5°	

The air within the buried glass jar showed + 0.9° C.

These findings are unequivocal[1] and show the following:

a) *The soil and the atmosphere contain an energy which is thermically measurable in our apparatus.*

b) The energy is measurable in high values only with the use of a *definite arrangement of materials.* That is, in order to obtain an *increase* in the temperature difference (To — T), one must use organic material on the outside and metallic material on the inside.

This experiment also shows the significance of the arrangement of materials in connection with the radiation of the soil and the sun. When the influence of the sun radiation is eliminated by shade, the difference To — T decreases, compared with all control measurements, from an average of about + 5° C. to an average of about + 2° C. The glass-covered control thermometer, which is exposed only very little to the soil orgone radiation, shows a difference of only about 1° C. The orgone accumulator—thus far the most efficient apparatus for the concentration of the orgone energy—shows far higher values, that is, *more than + 2° C.*

The temperature *decrease* in the open air due to the low night temperature shows in the box in spite of the insulation. Nevertheless, the difference (To — T) remains constant within certain upper and lower limits because of the *parallel* drop of To and T. Observations during about 3 hours showed the following:

To	= 11.4°	To	= 9.5°
T air	= 4.6°	T air	= 3.5°
To — T	= 6.8°	To — T	= 6.0°

To	= 6.5°
T air	= 0.6°
To — T	= 5.9°

Summary of experimental results:

1) The apparatus described shows, under all circumstances, a temperature difference between the thermometer above the apparatus and the control thermometer, in the absence of any constant source of heat of any known nature.

2) Measurements in the open air demonstrate a radiation from the soil which, depending on different arrangement of materials, manifests itself in varying differences of temperature.

The temperature difference in the open air varies with the intensity of the sun radiation and with the hours of the day. On sunny summer days, differences up to 20° C. are not rare. (It goes without saying that the orgone thermometer is never exposed to direct sun light).

The thermometric measurement of the soil orgone radiation can be done in various other ways. One only has to know the basis of comparison. One can compare To with T air or T soil. The To of the air is different from the To of the soil. Similarly, it makes a difference whether we measure inside a vertical orgone tube without a metal plate or above such a plate in the tube. The diagrams (*cf.* fig. 3, p. 7) illustrate a few methods of measuring the temperature difference.

Summarized, the results are the following:

In a metal tube, the temperature increase is greater above a metal cross-plate than without such a plate.

During rainy weather, the temperature differences are minimal or altogether absent.

[1] This particular experiment was done in order to refute a certain objection which had been raised. A physicist tried to explain the temperature difference at the accumulator by "heat convection from the room ceiling to the table top." He failed, however, to check his interpretation of the temperature difference by simply measuring it *in the open air and in the soil* where there cannot possibly be a "heat convection from the room ceiling to the table top." If one does so, one finds that there is a consistent temperature difference which varies only with the weather.

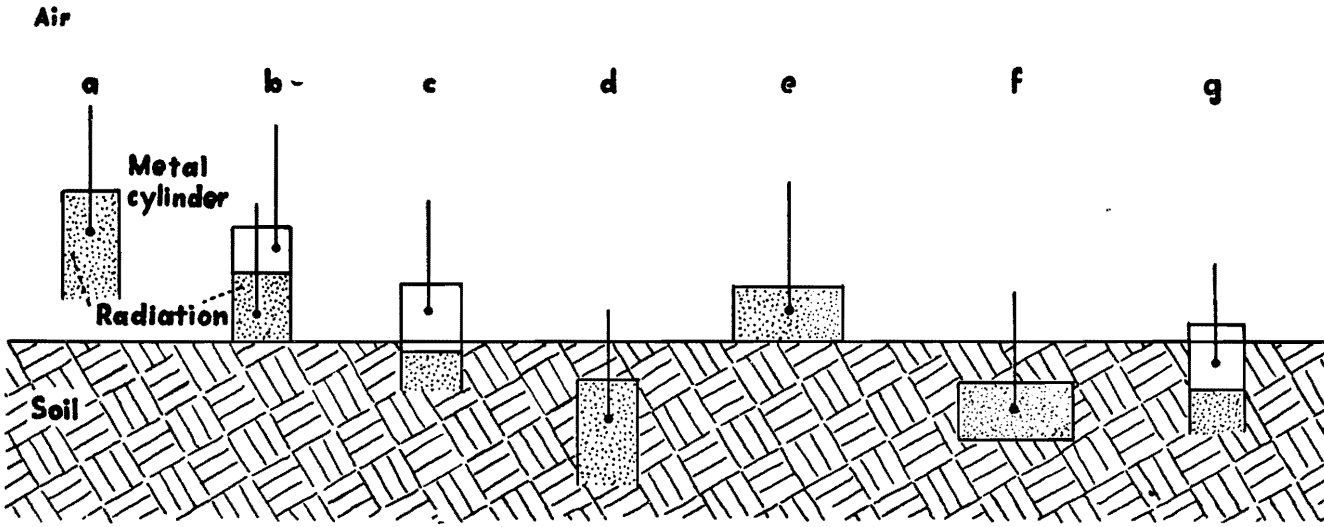


FIG. 3, a-g. Different methods of measuring To — T in the soil and the atmosphere.

With intensive sunshine, they return and reach high values.

In order to get the effect of the *orgone radiation,* we leave the tube open. In order to get the *temperature difference,* we close the tube and measure the temperature above the plates.

2. DEMONSTRATION BY MEASUREMENTS WITH THE STATIC ELECTROSCOPE

The measurements of the temperature difference To — T show that a radiating energy works inside of the apparatus. They say nothing about the *nature* of this energy. Neither do the subjective light phenomena, in spite of the fact that they are very impressive and convincing.

We measure the discharge of the electroscope systematically several times a day over a period of months, within the orgone accumulator, in the room and in the open air. This is done with the following considerations:

Charged electroscopes discharge *more rapidly* in strongly ionized air than in weakly or non-ionized air. "Ionized air" means air which contains negative electric units, or "electrons." The air in a room can be "ionized" by Xrays or ultraviolet rays. Air at high altitudes is more highly ionized than air at sea level. Charged electroscopes discharge *more rapidly* in strongly ionized air because that air forms a conductor between the various parts of the electroscope so that the charge of the metal walls and that of the electroscope leaf are more quickly equalized than in non-ionized air which is not such a good conductor. This is the principle of electroscopic measurements in the investigation of cosmic rays.

In measuring the electroscopic discharge within and without the orgone accumulator, we may expect the following possible results:

1. *The speed of discharge is the same inside and outside.* This would mean that the charge in the apparatus is the same as outside, in other words, there is no concentration of the atmospheric orgone energy inside. In that case, the phenomenon of the temperature differences would be incomprehensible.

2. *The speed of discharge is greater inside than outside.* This would mean that the air within the apparatus is more strongly ionized than on the outside, that is, it contains more negative electrical particles (electrons). In that case, our orgone energy would be *identical with negative electricity.* In this case, also, the fact that the orgone energy is absorbed by organic materials would be incomprehensible.

3. *The speed of discharge is less inside than outside.* This would mean that our orgone energy is *not* identical with negative electricity. In this case, the fact that the electroscope discharges more slowly inside and why this indicates a concentration of the orgone energy, would have to be explained. Only in this third case would the subjective phenomena, the temperature difference and the speed of the electroscopic discharge become understandable in the same light. In this case, our orgone theory would be considerably advanced, because now several manifestations of the energy would be reduced to *one* principle.

The experiments show, in fact, that the speed of discharge is *less on the inside than on the outside.* We shall postpone the how and why of this observation and simply record this fact. From this we conclude:

1. *The orgone energy tension within the apparatus is different from that outside.* The difference in tension indicates a difference of potential between inside and outside. The question remains whether the drop in potential is from the inside to the outside or vice versa.

2. *The energy within the apparatus cannot be the result of a stronger ionization of the inside air;* otherwise, the electroscope would discharge more rapidly in-

side, instead of more slowly. That means that the energy is an energy *other than negative electricity.*

Equally rapid or more rapid discharge within the accumulator would be easy to explain in the framework of known theories. A discharge which is *slower* on the inside than on the outside, however, is difficult to explain.

Here we are aided by the fact that we charge the electroscope from cotton or cellulose or from our hair (provided it is dry) by means of a cellulose disk or a rod of polistyrene or rubber. These substances take up the energy from our hair. The energy is present in the air inside the apparatus as well as outside, only in a *different concentration,* as is shown in the difference in the speed of discharge. The electroscope communicates with the air through the disk at the top and through holes in the casing, while the latter is grounded. The energy with which it is charged from the sun radiation or our body is given off into the air in the process of discharge. We are justified in making the following assumption:

The energy with which the electroscope was charged will be discharged into the air *the more rapidly the lower the energy tension is in the air* relative to the charge of the electroscope. Conversely, the energy will be discharged the more slowly the higher the tension is in the surrounding air, that is, the smaller the difference between the energy tension of the electroscope and that of the surrounding air.

This assumption is in full accord with the general laws of energy: Water flows all the faster from a higher basin to a lower one the greater the difference in height between the two, and vice versa. The speed depends on the steepness of the drop, or, in other words, on the difference in energy of position. The metallic plate of the electroscope *discharges more quickly into air with a low energy tension than into air with a high tension.*[2]

This characteristic of our energy is new. It cannot be explained by the theory of ionization. Electrically highly charged air would cause the electroscope to discharge more rapidly. Therefore, *our energy cannot be electricity.* This inevitable conclusion is disturbing, for an energy which has electroscopic effects and yet is not electromagnetic energy sounds implausible.

We have to check another objection: The spontaneous discharge of the electroscope is slower within the apparatus because the air circulates more slowly in it than in the open air. Consequently, the exchange of the air ions takes place more slowly inside, and this is the reason for the slow discharge; therefore, the phenomenon is explained by the theory of ions, in other words, electricity.

This objection is easy to check. We measure the speed of discharge of the electroscope in the open air. Then we charge it again to the same mark and make the air around the electroscope circulate more rapidly with the aid of an electric fan. The experiment is then repeated in the room. We find that the fan does *not* influence the speed of discharge. The difference in speed of discharge, then, cannot be ascribed to the circulating air. The speed of discharge depends *only on the atmospheric orgone tension.* This tension is determined by the density, or concentration, of the orgone particles per cubic unit of air.

Our observations show the concentration of the energy in the apparatus to be higher than in the open air. The term *accumulator of atmospheric energy* is therefore justified.

Theoretically, enclosed electroscopes should not lose their charge. The fact remains that even enclosed electroscopes

[2] I am trying intentionally here to explain the difference in speed of discharge on the basis of the traditional theory of the potential difference. As will be shown in a different context, another, purely biophysical interpretation does better justice to the facts.

show a spontaneous discharge. This is what the physicists call the "natural leak" and ascribe to the humidity of the air. *Thus what we measure is really the phenomenon called "natural leak."* We do not try to seal the air in the electroscope hermetically against the outer air; on the contrary, we let it intentionally communicate with the outer air. We determine just that phenomenon which the physicist, in measuring the effect of some electrical radiation, attempts to exclude, and which, to the extent to which he fails to exclude it, he subtracts from the effect. The spontaneous discharge of the electroscope which takes place "for no known reason" *is nothing but the normal effect of the atmospheric orgone.*

Another objection which might be raised is this: The inner metal walls screen the inside of the accumulator against the effect of radio-active substances; it is for this reason that the electroscope discharges more slowly inside than outside. This objection is refuted as follows:

1. The phenomenon (slower discharge inside) as well as the temperature difference, is present everywhere, no matter where we place the apparatus. It is more than unlikely that "radio-active substances" are present *everywhere.*

2. If the phenomenon were due to radio-active substances on the outside of the apparatus, the discharge would be more rapid in a simple wooden box than if this wooden box is screened with metal plates on the *outside* against radio-activity. In reality, it is slower and not more rapid under these conditions. This refutes the objection and is a further proof of the correctness of our interpretation.

3. QUANTITATIVE DETERMINATION OF THE ORGONE

As we have seen, the orgone energy expresses itself in temperature differences and in differences of electroscopic discharge. These facts can be made the basis of *quantitative* orgone measurements. To begin with, we define the unit of orgone energy, *one Org:* This is the amount of orgone energy in a space of 1 cubic foot which corresponds to the maintenance of a temperature difference (To — T) of 1° C. for 1 hour, according to the formula

$$1\ \text{Org} = (\text{To} - \text{T}) \cdot t \cdot f^3.$$

(To — T = 1° C.; t = 1 hour; f^3 = 1 cubic foot).

The *amount* of orgone energy, i.e., the number of orgone energy particles in a unit of space (Org), has to be distinguished from the *orgone tension* (Op). We shall call 1 Op that atmospheric orgone tension which in the time unit of 1 hour (T, 60 t', 3600") decreases the charge of an electroscope by the amount of one unit (Eo — Er = 1).

If one Op (Atm) designates the unit of the atmospheric orgone tension, Eo the charge of the electroscope, Er the remaining electroscope charge after reading, (Eo — Er) the amount of discharge, and t the time in hours, then

$$\text{Op} = \frac{t}{\text{Eo} - \text{Er}} = 1$$

is the formula for the atmospheric orgone tension in the open air. The Op *within* the orgone accumulator we differentiate by appending the sign "accu." Op can also be directly expressed in hour-Org, minute-Org or second-Org, depending on whether a unit of charge is discharged in an hour, minute, second or multiples thereof:

1 hour Op	=	60 minute-Org	(60'0)
0.75 Op	=	45 minute-Org	(45'0)
0.5 Op	=	30 minute-Org	(30'0)
0.25 Op	=	15 minute-Org	(15'0)
0.16 Op	=	10 minute-Org	(10'0)
0.1 Op	=	6 minute-Org	(6'0)
0.05 Op	=	3 minute-Org	(3'0)
0.015 Op	=	1 minute-Org	(1'0)
0.00025 Op	=	1 second-Org	(1"0)

If, for example, one unit of electroscope charge is discharged in 30 minutes, then Op is:

$$Op = \frac{0.5\,(t')}{1\,(Eo - Er)} = 0.5, \text{ or, } Op = 30'$$

org.

If, for example, the total charge of the electroscope Eo = 5 Org (the equivalent of 630 volts) is discharged in 20 minutes, Op is:

$$Op = \frac{0.33\,(t')}{5 - 0\,(5\ Eo - oEr)} = 0.066, \text{ or,}$$

Op = 4′ Org, that is, 4 minute-Org.

Whether one prefers one or the other method of calculation is merely a matter of convenience.

The orgone charge of the electroscope can also be expressed in electrostatic units. An "electrostatic unit" equals about 300 volts. We charge an electroscope with energy from our hair so that the electroscope leaf is deflected 45° or 90°. We can produce the same effect by applying an electric current of high voltage to the electroscope. *One unit of orgone charge then corresponds to that voltage which is necessary to produce the same deflection of the electroscope leaf.* We find in this way that by stroking our hair softly only *once* we can take off energy amounts of hundreds of volts.

The instrument which was used in these measurements is a static electroscope with aluminum leaf. The volt calibration in the laboratory of the Radio Corporation of America showed the following values:

Scale Divisions	Volts	
1	135	approximately 45 volts per scale division
2	180	
3	225	
4	270	
5	330	approximately 60 volts per scale division
6	390	
7	450	
8	510	
9	570	
10	630	approximately 100 volts per scale division
11	730	
11½	780	

Difference: 120 volts

In our experiments, we always charged the electroscope from our hair up to the *tenth* scale division, that is, with an amount of energy equivalent to about 630 volts. We then let it discharge to the air two scale divisions, that is, the orgone equivalent of about 120 volts. *Two scale divisions (8 to 10) correspond to 1 orgone charge unit, that is, the equivalent of 120 volts.* If the electroscope, after being charged to the tenth scale division, that is, with an orgone energy equivalent of 630 volts, discharges within 1 hour (60 minutes) 1 Org (= 120 volts), the orgone tension (Op) of the surrounding air is 1 hour-Op or *60 minute-Op*. In other words, the electroscope discharged into the air 2 volts per minute.

We determined *1 Org* by the constant *temperature difference* (To — T) in an accumulator of 1 cubic foot in the course of 1 hour. In the *electroscopic* measurement we determine 1 Org as the equivalent of 120 volts. We do not know yet whether these two different determinations of the unit 1 Org are equivalent. The parallel course of the curve representing To — T and that representing the atmospheric orgone tension (Op Atm) seems to indicate that this is so. A definite answer to the question will require further research.

I would like to present the results of a few measurements which show interesting facts about the orgone tension in the atmosphere and about the relationship between the atmospheric tension and the tension in the accumulator. Many details here still require intensive work over a long period of time, but the essential points are clear. Fig. 4, p. 12, shows four superimposed orgone tension curves. "Op Atm" is the curve of the daily variations in atmospheric orgone tension, always measured at noon. "Op Room" describes the daily variations of the orgone tension in the room in which the orgone accumulator was kept at the time of these meas-

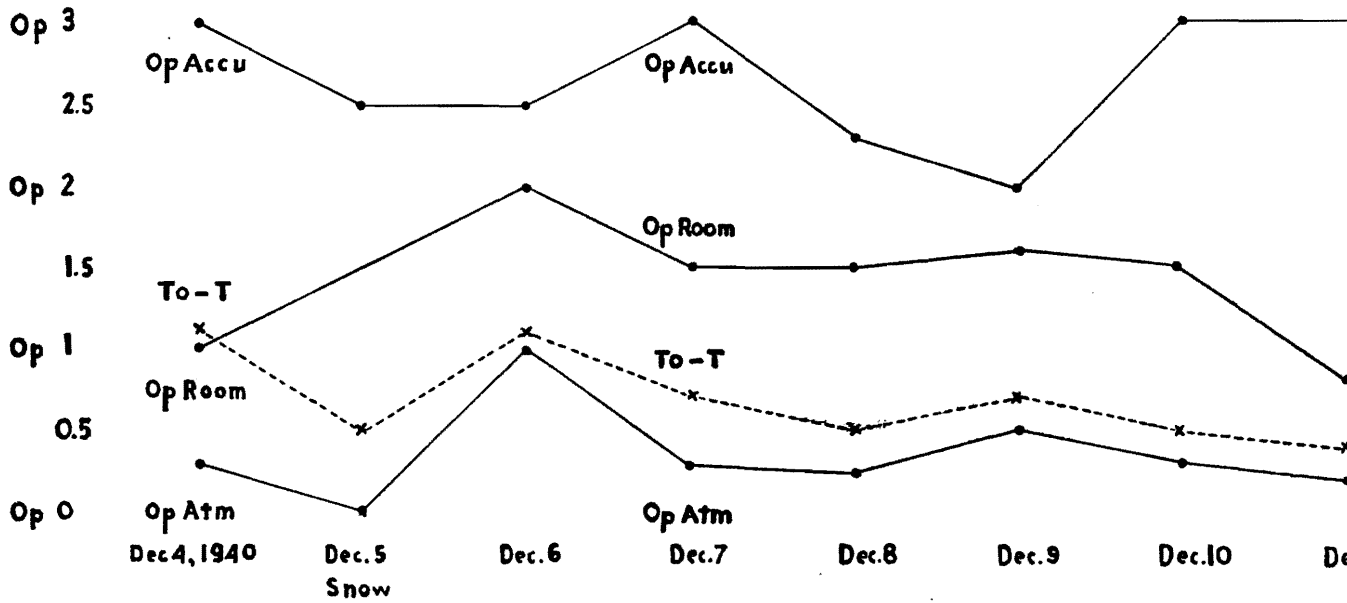


FIG. 4. Measurements of the atmospheric orgone in the open air, in the orgone accumulator and in the orgone room, ar
(Op 1 corresponds to To — T = 1° C.)

urements. The third curve, "Op Accu," represents the variations in orgone tension within the accumulator, measured between 12 and 1 P.M. The fourth curve (broken line) is the curve of the temperature difference (To-T) at the orgone accumulator, measured daily between 12 and 1 P.M., from November 29, 1940 to December 22, 1940, in an accumulator of 1 cubic foot, and beginning December 24, 1940, in an accumulator of 25 cubic feet (2′ x 2,5′ x 5′) built for therapeutic experiments with humans. (For reasons of space, only a section, covering 9 days, is reproduced in fig. 4, p. 12).

The curves show the following:

1. The tension curve of the room (Op Room) is, expressed in minute-Org, higher than that of the atmosphere; that of the accumulator (Op Accu) is higher than that of the room and that of the atmosphere (Op Atm). That is, *the energy concentration is highest in the accumulator.*

2. The curve of the temperature difference (To-T) runs *more or less parallel* to the tension curve of the atmospheric orgone (Op Atm).

3. The increase of tension in room and accumulator occurs *roughly one day after* the increase in atmospheric tension.

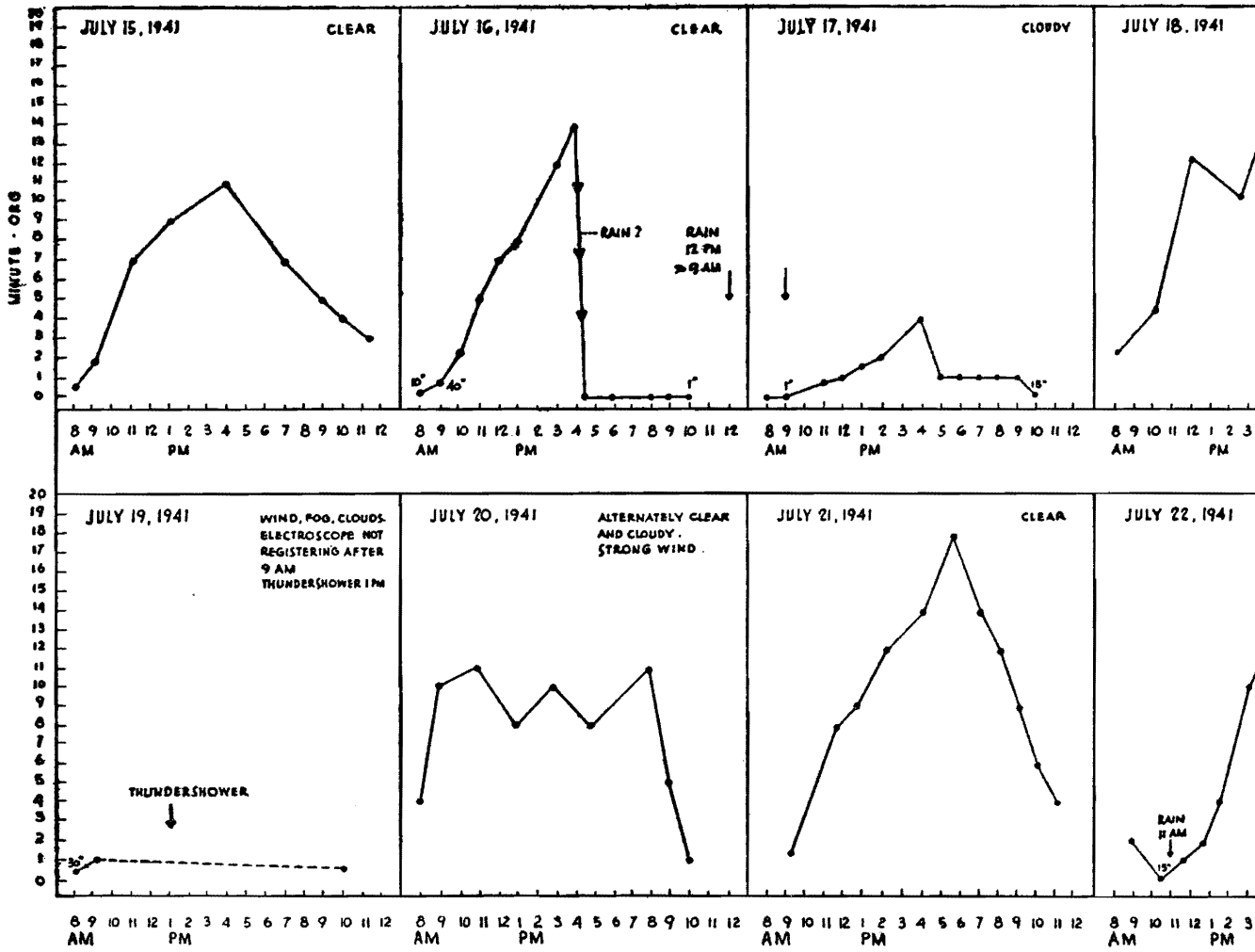
4. The atmospheric tension is *low on days with rain and snow, and high on days with sun.* The atmospheric tension varies between about 0 and 1. One or two days before rain or snowfall the atmospheric tension curve drops more or less sharply; the temperature difference curve also drops before or at the time of rain.

In other words, there is a *connection between atmospheric orgone concentration and weather formation.* Because we use the orgone accumulator for therapeutic purposes, the knowledge of this connection is important.

Here, we have to consider an important objection which might be raised on examination of these curves. The objection is this: In order to explain the drop in the curve, indicating a more rapid discharge before rainfall, we do not have to assume a special orgone energy. This phenomenon can be explained by the theory of the "electricity in the air." Previous to rain or a thunderstorm, the air is more highly ionized and that is what causes the more rapid discharge of the electroscope. I had this doubt myself, but there was the fact of the *slower* discharge of the electroscope within the accumulator.

This objection was completely refuted by the measurements taken in July and August, 1941, in my laboratory at Bald Mountain, Maine. I measured not only the daily variations at noon, but the variations of atmospheric energy tension from 8 A.M. to about 12 midnight every hour, in all kinds of weather. These measurements showed unequivocally that the discharges of the electroscope are based *not on variations in "air electricity" but on variations of the atmospheric orgone tension.*

Fig. 5, p. 14f., shows the daily variations of the atmospheric orgone tension between July 15 and 25, 1941. The discharge of the electroscope is far more rapid in the early morning than between noon and 4 P.M. It is slowest around noon. This results, of course, from the intense sun radiation, in other words—quite in accord with our other observations—*from a higher concentration of orgone energy.* It would be nonsensical to assume that in the early morning or late afternoon the atmospheric air is more strongly "ionized" than at noon, when the sun shines intensely. If the discharge were due to the electricity in the air, it would be *slower* in the early morning and late afternoon than at noon; but it is, on the contrary, more rapid. The highest concentration in the atmospheric energy is found around 4 P.M. On entirely cloudless days, the curve ascends and descends in a quite regular manner. On days, however, when sunshine alternates with cloudy weather, the curve shows an irregular up and down (*cf.*, for example,



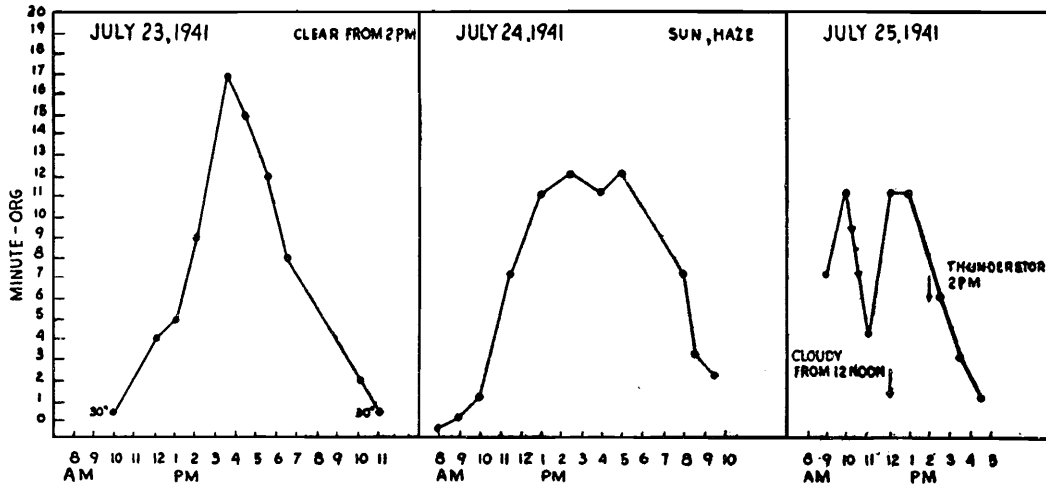


FIG. 5. Daily variations of the atmospheric orgone tension between July 15 and July 25, 19

the curve for July 20th). We find, furthermore, that *about 3 to 10 hours before a rainfall or thundershower, there is a rapid drop in the concentration of the atmospheric orgone energy.* The electroscope discharges very rapidly (less so in the accumulator than in the open air), and the temperature difference To-T becomes very small or disappears altogether. If the electroscopic discharge is measured regularly over a long period of time, one finds that the curve is roughly parallel to that of the temperature difference.

An inspection of the curves will show the following: On July 25, there was a shower at 2 P.M.; between 10 and 11 A.M. the tension had dropped from 12′ Org to 5′ Org. On July 16, between 4 P.M. and 4.30 P.M., that is, *within 30 minutes,* the tension dropped suddenly from 14 minute-Org to 10 second-Org. Around midnight, a heavy rainfall set in.

Similarly, on July 22, the tension dropped, between 4 and 7 P.M., from 12′ Org to 2′ Org; by 10 P.M. it was only 30″ Org. At 3 A.M. on July 23 a heavy, steady rain set in. On July 19, a windy and very cloudy day, the tension did not go above 1 minute-Org. At 10 A.M. the electroscope could no longer be charged, and at 1 P.M. a heavy thundershower set in which lasted until 3 P.M.

Conversely, days with a regular tension curve and relatively high orgone concentration in the evening (1 to 3 minute-Org) are regularly followed by a clear day. These daily variations are, of course, highly important for the therapeutic application of the orgone. If we want to give the patient a certain dosage of hour-Op or minute-Org, the exposure time will have to be different depending on whether it is early morning, noon or evening. This will be necessary as long as we cannot regulate the orgone tension in the accumulator independently of the weather.

Control measurements which have been constantly taken since the summer of 1941, again and again confirmed the fundamental finding: variations of the tension depending on the time of day, its drop previous to and during rain or snow, and the reactions at the electroscope which refute the explanation by ionization of the air.

The reader trained in physics will ask, *What is the connection between orgone and so-called static electricity?* This question will be discussed elsewhere.

Concluded October 1941