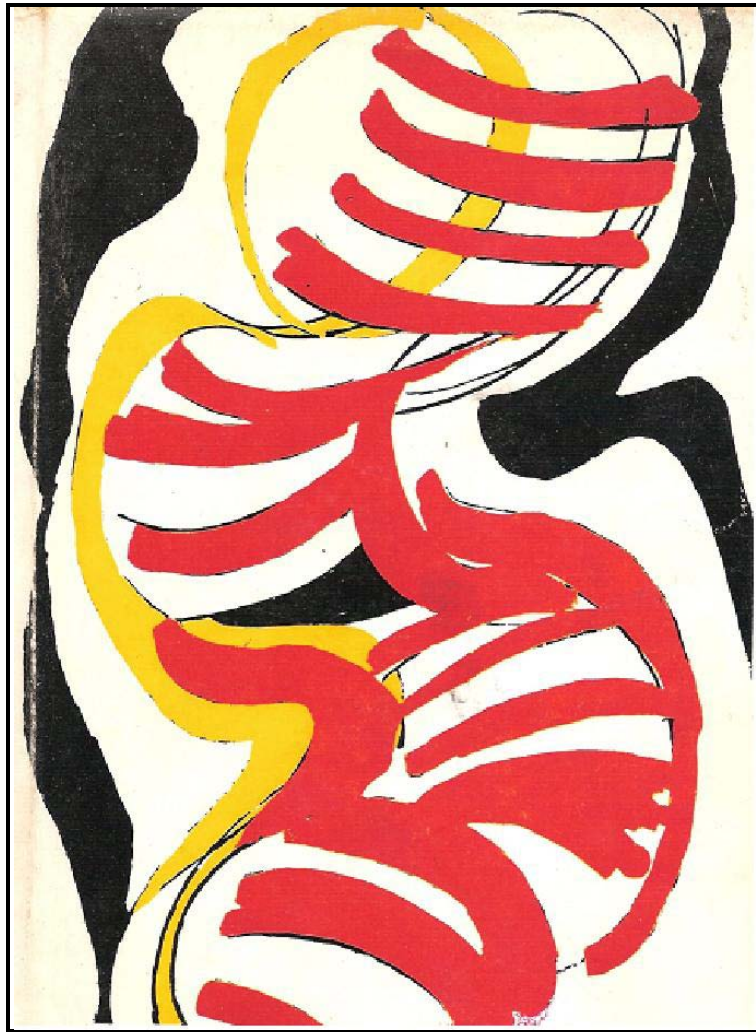


ENERGIES

MATERIAL – VITAL – COSMIC



J.G. BENNETT

ENERGIES

Material Vital Cosmic

by

J.G. BENNETT

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Foreword to the Claymont Communications edition 1989

JOHN G. BENNETT (1897-1974), a man of exceptional insight and accomplishment, devoted his life to seeking the meaning of human existence. He traveled extensively in Asia in the early years of this century, initially as an officer and interpreter for British Military Intelligence. His skills as a linguist – he spoke six languages fluently, and several dialects of Central Asia – opened doors for him, and he was able to make contact with many prominent spiritual and political leaders. He returned to the East again and again, convinced that the key to spiritual transformation lay in the wisdom of the ancient teachings. In 1920, while in Turkey, he met G.I. Gurdjieff whose work, and his central question: "What is the sense and significance of life on the Earth, and human life in particular?" became a touchstone for Bennett's search. After a period of work with Gurdjieff at Fontainebleau, Bennett returned to England, where he studied with Gurdjieff's student P. D. Ouspensky for several years, while developing his career as a scientist in industrial research. After the Second World War, Bennett was reunited with Gurdjieff in Paris and entered an intensive period of personal work with him, which came to an end with Gurdjieff's death in 1949. Although he continued to explore other traditions, Bennett regarded Gurdjieff as his teacher throughout his life. A brilliant scientist and mathematician, Bennett brought a trained intellect to his spiritual search; the result was a powerful synthesis – a comprehensive, practical approach to transformation. Gifted with an uncommon ability to transmit his understanding to others, Bennett worked with students both individually and in groups over nearly five decades, maintaining an attitude of search and research, of experimentation and question. In 1964, he founded the Institute for the Comparative Study of History, Philosophy and the Sciences; the Institute's property, Coombe Springs, in England, became a well-known centre for group work, seminars, and study. Bennett spoke of continuous education, and referred to his life as a "work in progress." In his teaching, he elucidated the relationship between knowledge, being, and will – that ideas must penetrate beyond the intellect to reach a deeper part of us, and that knowledge must be amplified by awareness. In his exploration of the religious and devotional, he delved deeply into traditional rituals, seeking the common spiritual action at their roots.

Bennett developed a scale of energies and their transformations, in which he intended to present many of the ideas from Gurdjieff's "All & Everything" in a form that was easier to grasp. He sought an essential understanding of the path we travel when we enter into the spiritual worlds. His studies on universal energies, which took place in the 1950's, describe spirituality as energy, occurring on a finer level than our ordinary experience. Each spiritual action has its own unique quality of energy, which is its contribution to the cosmic process. Man is part of and participates in this

spectrum of energies, and his evolutionary path lies in choosing to participate consciously in the refinement of energies. Through struggle with oneself, and a deep, objective seeing of our situation as it is, certain intermediate energies are produced, which allows help to come from a higher level.

It is not enough to have the good will to do it; it is also necessary to have new kinds of perception, new understandings... Therefore we have also the obligation to understand life better and this starts with understanding what human life is for and how this something is to be produced through the way we live our lives.¹

Seeing the disintegration of values in contemporary culture, the neglect of the needs of the planet, and the alienation of the individual as symptoms of a spiritual crisis, Bennett taught the necessity of cooperation between man, nature, and the higher powers. In presenting this view of personal evolution in a cosmic context, and in his work to prepare others to serve the needs of the future, Bennett went beyond despair to the hope inherent in "work on oneself."

The answer to the question that Gurdjieff himself proposed... is that human life is required to produce something that is needed for the harmony of the solar system, and particular, this planet... this something is produced by the way we live our lives and the way we die our deaths... Man is not intended just to live for his own egoistic purposes; he has obligations to ... and in fulfilling these can fulfill himself. This is the notion of the transformation of man.²

In 1971, drawing on fifty years of practice and experience, Bennett undertook a ten-month residential program at the International Academy for Continuous Education at Sherborne House in England, where people from all parts of the world gathered to learn and live the techniques of transformation. Shortly before his death in 1974, Claymont Court, in West Virginia, was purchased, where an experiment in intentional community based on methods of inner work, was begun.

Bennett's life work ranged from a study of the entire body of human knowledge and understanding (The Dramatic Universe) to the power of a moment of attention in an individual life. *Energies, How We Do Things, and Creative Thinking* were compiled by Bennett, based on lectures he gave during the late 1950's and early 1960's. We are re-issuing these books now to give the reader a taste of the extraordinary vision and practice that emerged from his lifelong search.

¹ From an unpublished talk by J.G. Bennett 1973

² Ibid.

ENERGIES: MATERIAL - VITAL - COSMIC

PREFACE TO THE ORIGINAL EDITION

These lectures were given nearly eight years ago when I had just completed one of the periodical revisions of "The Dramatic Universe", and were an attempt to explain in simple language the theory of energies developed in Chapter 32 of that work. They happened to coincide with my first experience of Subud and the discerning reader will recognize passages that refer to this experience.

They are being published almost as they were given, not because I would express myself in exactly the same terms today; but because I can see how useful it is to have a broad grasp of the nature of energy and its various qualities. There is a valid sense in which it can be said that nothing is more important for us than to understand about energies; for our destiny depends upon our ability to make the right use of the energies available to us. This right use can be achieved by 'right conduct' without understanding what we are doing – much as a cook can make a good meal with no understanding of the principles of nutrition and biochemistry. Unfortunately the rules of right conduct can never be either precise or comprehensive enough to ensure that we shall make right use of our energies in all circumstances. Still more unfortunately, the circumstances which defy guidance by rules are not always trivial. Some of the most important occasions are unique and arrive so unexpectedly that we cannot prepare for them. To find the right action in such cases we need to understand what is happening to us; and that very often means to be able to distinguish between one kind of energy and another.

Again, the use of energies is a highly technical matter. We know this well enough in dealing with nuclear energy or even the more accessible energies of electricity, heat and motion. We do not expect to drive a car by the light of nature, or to build an electrical generator without any knowledge of electrical engineering.

The vital energies are round us and in us and our very existence depends upon their use. The ordinary satisfactions of life depend upon transformations of energy. The control of these transformations is a highly technical matter. When it goes wrong we are sick and send for the doctor, but right use is far more than the avoidance of illness. The capacity for work and enjoyment depends upon the availability of the right energies in the right place – and how little we know of the techniques required.

Our deeper well-being –in the psychological sense – depends upon energies of another kind; but they are still energies and their control and use is pre-eminently a technical matter. Nearly all the emotional and mental suffering to which mankind is subject is due to the failure to use psychic energies rightly. This is obvious to all in the case of the sexual energy; but it is no less true for

the energies of thought and feeling. Psychology is scarcely at the threshold of the understanding of psychic energies. Gurdjieff knew more of the techniques involved than anyone else I have met or heard of. He taught us many of these techniques in the form of exercises and disciplines. He went further and set up a scheme of energies – or as he called them 'substances' – that was the starting point of my own investigations. Students of Gurdjieff's ideas will recognize in the present book many of the notions contained in the Chapter "Purgatory" of "Beelzebub's Tales to his Grandson", though, I hope, in a form that is easier to grasp.

Finally, there is the role of energies in the transformation of man himself. Gurdjieff defined man as a 'cosmic apparatus for the transformation of energy'. Man's being and also his becoming; his actual existence and his potentiality for attaining to a fuller or higher life; equally depend upon transformations of energy. These transformations fall into three categories. First of all, there are the transformations which are or ought to be under man's own control. Secondly, there are those that depend upon his cooperation or submission, but can neither be initiated nor maintained by any action of his own. Thirdly, there are transformations that are wholly beyond man's power to understand or to direct.

These three transformations correspond to the three main elements in the spiritual life of man. The first is the element of understanding and "work upon oneself" of which Gurdjieff was one of the foremost exponents in our time. The second action, which is that of submission, is particularly well exemplified in the Subud latihan. The nature of this action is that it requires from man, consent and submission, but no work of his own. The third kind of transformation is properly to be called "supernatural". It is sacramental in character because man can participate in it only through an external act, but without any consciousness of its true character. This third kind of action belongs to the religious life, but it is none the less a transformation of energies. It is abundantly clear that the Sacraments of the Christian religion do concern supernatural energy transformations. This is true of all the Sacraments from Baptism through the Eucharist to the Last Unction.

If, then, transformations of energy concern us in every phase of our lives, we should be wise to do everything in our power to understand energies better. It is not enough to do this theoretically, for energies are primarily for use and only secondarily for knowledge. This is as true of the psychic and spiritual energies as it is for the physical and vital energies.

In this book, I show how energies can best be studied according to twelve great qualities, within each of which there are various kinds and intensities. Within this range, four energies are of direct significance for our human experience. These are the energies that operate in our conscious life, and which we can to some extent control or regulate. I have called them the automatic, sensitive,

conscious and creative energies. A practical understanding of these four energies enables a man to regulate his own life upon almost all the levels of experience open to him. Nevertheless, to grasp their full significance one should see them within the total structure of energies from the material to the cosmic.

The present book should be taken as an introduction for those interested in the subject. Those who wish to learn something about the techniques of energy control and transformation are invited to write to the author at Coombe Springs.

Coombe Springs,

Coombe Lane West,

Kingston-upon-Thames,

Surrey.

June 1964.

LECTURE 1

THE TWELVE KINDS OF ENERGY

The Reason for Studying Energies

Why do we want to study energies? It is because everything that is done in us and in the whole world is done through the transformations of energy, and therefore if we want to learn how to do anything large or small, what we are really learning is how to use energies. Most of the time, we have no idea that this is what we are doing, any more than a baby learning to walk realizes that it is learning how to use energy. But there are some processes that can be directed intentionally only if one understands what has to be done with energies and this can be very important for us. Our aim should be that ultimately we shall be able to direct our own work, and not always depend upon being told what to do; we can be helped towards this if we can understand for ourselves something about energies and their transformations.

What is Energy?

In the ordinary school book teaching of mechanics, energy is defined as the power to do work. Here only mechanical work is referred to, but the same definition can be applied to energies that have nothing to do with ordinary mechanics. Whatever kind of work we have to do, we need the corresponding kind of energy in order to do it. And it has to be the corresponding or right kind of energy. For example, if I want my watch to go, I have to wind up the spring. That means I put some energy into the spring and then the watch will go. I cannot use any other kind of energy for winding the watch. If I want to cook an egg, I have to boil water – but it is of no use putting my watch on the gas stove to get it wound up. If I want my car to go, I have to put the energy obtained from burning petrol into it. If I want my body to go, I have to put the energy from food into it – but I cannot put food into my car and I cannot feed myself on petrol.

It is just the same with our psychic functions. Each kind of inner work requires energy of a particular quality. Let us say we want to feel: there is a particular quality of energy which is necessary in order to feel in a particular sensitive way that goes beyond our habitual automatic reactions. We may be aware of the difference, but not realize what is required. The result will be that we shall find that our reactions are not at all what we intend. If we use the energy which

is quite sufficient for our automatic functioning – automatic seeing, automatic mental associations – and try to feel with it, our feelings will not go, any more than the watch will go if I put it on the gas stove. So energy is the power to do work, but each kind of work requires the appropriate kind of energy.

The Characteristics of Energy

We have just seen that there are different kinds, different qualities of energy, and for every kind of work a particular quality is needed. But energies do not differ only in quality, they also differ in two other ways: in quantity and in intensity. In order to determine the energy that is available or required for a particular kind of work we have to know three different things: first, what quality of energy we have to use; second, what is the quantity; and third, what is its intensity.

Intensity

Just to help you to see what I mean by these three kinds of things, let us talk again about heat. I want to boil an egg. I know that heat is the kind of energy I need for this. So that already from my ordinary experience of life I recognize that there is one particular quality of energy I need to cook an egg, and I do not expect to use some other quality. But I also know that there is a certain intensity required. By intensity of heat I mean what is usually called the temperature. For example, I know that warm water will not coagulate the albumen, or as we say 'cook' it. The water has to be at a certain temperature, and that means at the certain intensity called 'boiling'. If it is much more intense than that it will only dry up the egg or even burn it to a cinder. But supposing that I want to melt iron; it is no use putting a bar of iron into boiling water; it will not melt – so that the intensity which is quite sufficient to cook an egg is not sufficient to melt iron. It has to be much hotter – more than red hot-white hot. And when we speak about 'red hot' and 'white hot' we are using expressions which convey our recognition that there are different intensities of heat.

Quantity

Energy is not a matter of intensity only, but also of quantity. We know that if the gas pressure is very bad, it will take a long time for water to boil. Or if we have a very tiny flame, like a match, we will never get our water to boil at all. We understand very well that there is such a thing as quantity of heat because that is what we pay for. We pay for our gas so many pennies a therm, or for our coal so many pounds a ton; and what we are paying for is quantity.

Use

What intensity we get out of it to some extent depends on us, on the way we use it. If we use the right mixture of gas and air we get a hot flame; if we use too much gas or too much air we cannot get the highest possible temperature. There are always these three properties – quality, intensity and quantity – in any kind of energy with which we have to deal. It is just the same with electrical energy. Electrical energy can easily be turned into other qualities, so that we sometimes forget that electrical energy itself is neither hot nor able to make wheels turn round, but has to pass through some apparatus for that. Electrical energy has a certain quality of its own which is quite different from that of the other kinds of energy. It has intensity which we call electromotive force which we usually measure as 'voltage'. If we want to get a great big spark we know we have to use a very high voltage. We look at lightning coming from the clouds, and we know that perhaps millions of volts are required in order to break down the resistance between the cloud and the earth, while only a few volts are sufficient to make a lamp burn brightly. We also know very well from experience of our ordinary practice in buying electricity that it also has quantity measured in electrical units, such as 'kilowatt-hours'.

So we could go through all the different kinds of energy, and this applies not only to mechanical or physical energies but also to vital energies. We know that if we want to do a certain amount of mental work we have to accumulate enough energy in order to be able to do it, and when the energy is used up we cannot continue the work. This means that the energies of thought or feeling are also limited. They have their quantities just as do heat or electricity, and also they have their intensities. It is possible to think, just by one idea at a time, with a few degrees of thought energy. If we want to put two or three or four thoughts together, a greater intensity is needed. We know very well that, at some point, we can no longer summon up the required intensity and our

thinking loses its power. There is not sufficient 'voltage' in any of us to be able to think of seven or eight thoughts at a time. Yet we can believe that someone might be able to do that, if he knew how to produce thought energy of sufficiently high intensity. He would then be able to think far more complicated and much richer thoughts than we are able to. But it will be the same kind of energy all the same. It is not the energy of a higher level of consciousness nor the energy of unconscious reflexes: it is always the energy of thought, but it may be at a higher voltage or it may be at a lower voltage.

In short, for anything we have to do, energy has to be right in three different ways. It has to be the right kind, it has to have the necessary intensity and there must be a sufficient quantity of it,

We shall come later to the practical question of producing, storing and manipulating the energies required for different purposes. Before we come to that, we must have a language in which to speak of these things. We shall construct this language by making a classification of energies with their respective qualities and properties.

The Principal Divisions

The first division, as far as qualities of energy go, is into the mechanical or physical energies, the life energies and the cosmic or universal energies. In each of these main classes there are many different varieties of energy; but it is possible to say nearly everything that we have to say about energies by dividing each of the three classes into four kinds or qualities. The basis of the division into four is this: we can see for ourselves that there is some kind of gradation or scale of energy. There are energies of a lower quality or energies of a higher quality; it means something to us to say that life energies are on a higher level than mechanical energies, and that cosmic energies are on a higher level than life energies. And within each of these classes there are also different levels. There is something which characterizes the top and the bottom of each class, and one can call these the 'plus' and the 'minus' of each of these energies. For example, with the mechanical energies, the minus side, or character is that they have no shape, no organization. They are what we can call 'dispersed' that is, random and chaotic. That is the minus, or negative, aspect of mechanical energy. On the other side it can be organized, form a particular pattern, and be used in a very special and definite way. Therefore we can call 'organization' the positive or plus side of mechanical energy. This distinction leads to a simple method of classification that gives us four kinds for each main class of energy:

+ +	Plus-plus, or dominated by the positive characteristic.
+ -	Plus-minus, or sharing in both the characteristics with the positive the stronger of the two.
- +	Minus-plus, or sharing in both with the negative stronger.
- -	Minus-minus, or dominated by the negative characteristic.

Table 1: Plus and Minus Characteristics

This way of distinguishing qualities is useful, but I must make it clear that it is only approximate. There are many intermediate grades and one cannot always be sure that one has assigned a particular energy to the correct division. Then again we seldom meet with energies in a pure state, but rather with blends and this also can make it difficult to know just what we are dealing with. There is also a more radical limitation that comes from the fact that the simple distinction of 'higher' and 'lower' qualities is only partly valid. The plus-minus and minus-plus qualities are, for many purposes, to be taken on the same level. I cannot go into all these distinctions here and will give the picture in a simplified form.

The Mechanical Energies – Dispersed Energy

We can say that minus-minus mechanical energy is dispersed energy because its chief and only characteristic is that it is dispersed and has no organization. That is the kind of energy that we know as heat. Heat is the lowest, least organized, most insensitive of all kinds of energy. It has no place of its own; it has no form of its own, no pattern of its own. Everything contains heat, everything that exists – air, water, our bodies, planets and stars. And heat just flows through everything quite passively. It has a certain character of intensity that we call temperature, and it always flows from where there is more intensity to where there is less intensity. That is to say, it has no direction or organization of its own. That is why I have marked it minus-minus; it has neither any inner organization nor any outer organization. Heat consists in this: that every tiny little particle of matter is in motion: vibrating, moving from one place to another, turning round and round, and in all these tiny motions there is a certain amount of energy. But it is quite random, quite chaotic or what we call dispersed. At the same time, it does not mean that this energy is

useless, because we know very well that everything requires a certain amount of heat in order to be able to be what it is. You know how dependent our own bodies are upon being at the right temperature. This means that they have to be able to take in the right amount of heat to make up for what they lose. But although heat is necessary there is nothing that it is able to do by itself. That is the first and lowest quality of mechanical energy.

Directed Energy

The second quality of energy appears wherever there is a direction. For example, if a train is moving along rails it has energy derived from its motion. That energy has also the direction in which the train is going. Or, if we look at things lying here on the table – glasses, water jugs – they all have a certain amount of energy that comes from the fact that they are in what is called the 'gravitational field of the earth'. This means that they are being pulled towards the centre of the earth and from that they acquire an energy which has a direction of its own. That is to say the energy in these objects lying on the table is not only a certain quantity and a certain intensity, but it is also directed. This kind of energy is sometimes called 'dynamical', but we shall use the term directed energy. The fact that it has a direction is the first step in having some quality of energy which is lacking in heat energy. You know also how it is with electrical energy: if we electrify certain materials such as a piece of amber, it will attract light bodies towards it. The same with a magnet which will attract pieces of iron. All round such electrified or magnetized bodies there is energy of attraction. But it is always in a definite direction, so that a body will always move in one direction when it is brought near them. Direction arises from the combination of two different things: one is this action and the other is its own movement. For example, if I were to throw a ball from where I am sitting it would begin to move in the direction in which I throw it but little by little the lines of its movement will bend over and it will finally come down on to the earth. It is the same with the way the planets go round the sun. The kind of directed energy that depends upon movement and the attraction of gravitation, electricity and magnetism, is very important. Directed energies already begin to have something more organized about them than the dispersed energy of heat. At the same time they do not hold together in any sort of way. That means that whatever direction they may have, they have no pattern except that they go towards something. We shall call it directed energy and put it in Table 1 as minus-plus mechanical energy to show that the dispersed character still predominates over the organized.

Cohesive Energy

The third kind of energy is the one marked plus-minus. These energies are of quite a different kind from either of the first two. They comprise all the energies by which everything is held together. They include what we call 'chemical energies'. All things we see round us – all solid bodies, the earth and all that is on its surface; all liquids, rivers and seas – are held together in a particular pattern because there are energies that bind them; and when these energies are studied it turns out that they have another property: that there is always something which is shared in them, and that is why the plus is put on the outside. They are connected together because here always something is shared. And that property of connectedness means that they are able to do all kinds of things that are very necessary. For example, we could not be sitting here if our bodies had not some of this energy of connectedness in them – we could not be sitting on the chairs unless the chairs had some of this energy of connectedness in them. We call this third kind of energy cohesive energy. One form of cohesive energy is that of chemical bonding. Cohesive energy is the source of the persistence of all kinds of bodies. It is much more highly organized than directed energy.

Plastic Energy

The fourth kind of mechanical energy, which is marked plus-plus, has a two-fold organization. This enables it to keep a pattern of its own by which it is able to hold together by itself. It is able to move about and yet remain what it is. That is why I shall call this fourth kind plastic energy. By 'plastic' I mean the property of changing shape without losing coherence. Elasticity, rigidity and the liquid state of matter are all consequences of the presence of plastic energy. For example, our bodies are pervaded with plastic energy which always adapts itself to the pattern of our bodies and goes about with them. The fourth kind of energy is of that sort. Not only our own bodies have it but everything else. Sometimes this is called 'free', 'structural' or 'fluid' energy, but I will call it 'plastic' energy to remind us that it does not depend upon a fixed shape. I could have called it 'organized' except that all energies are more or less organized, so that the differences in quality depend upon the kind of organization. A highly organized energy is a high energy: a disorganized energy is a low one. Plastic energy is the highest kind of energy possible without life.

We can now summarize these results in a diagram:

<i>Character</i>	<i>Name of Energy</i>	<i>Examples</i>
+ +	Plastic	Elasticity
+ -	Cohesive	Chemical
+ +	Directed	Motion, Gravitation and Magnetism
- -	Dispersed	Heat

Table 2: Four kinds of Mechanical Energy

These four energies are present everywhere, though the higher energies are more concentrated in the more highly organized forms of existence.

The Energies of Life

The simplest property of life is organization. Everything that is alive is to some extent organized, and therefore beyond the highest level of mechanicalness is the lowest or the minus property of life; and the highest property of life is consciousness, which is plus-plus. So here again, we have the plus-plus, the plus-minus, the minus-plus and the minus-minus, making four levels of life energy.

Constructive Energy

The first and simplest level of life energy is that which gives the power of organization. Life is always organizing the materials it is taking in, producing

the different kinds of bodies that are required for plants, animals and so on. This organizing energy has itself of course to be organized. It has not only a pattern of its own, but it has the power to produce patterns in other things, That power is sometimes called 'catalytic', which means the power of accelerating or helping a change without being itself changed. Everything that is alive depends upon these organizing powers, and all that we can learn about life shows us more and more how important a part at the basis of life is played by all these energies that have organizing power. I shall call these constructive energies.

Until recently, constructive energy was unknown to science. When I wrote "The Dramatic Universe", the only evidence I could give of its existence was in the activity of enzymes and hormones which bring about transformations in the vital fluids – blood and sap – that connect raw materials of the non-living world into the substances required for life. Since "The Dramatic Universe" was published, biological science has made one of the greatest steps forward towards understanding the foundations upon which bodies are built and life processes maintained. This is the discovery of the power of certain nucleic acids (DNA) to promote and regulate the synthesis of the animal life substance protein. It is now universally expected that this discovery will eventually lead to the artificial production of living forms; but there are no precise ideas as to the nature of the 'power' itself, beyond the fact that it is as much structured as causal. It seems to me that I may fairly claim to have predicted this discovery when I wrote "We may describe the primary life energy as constructive to emphasize the power of breaking down the material of its environment in order to rebuild it into its own tissue". Workers in the field of the nucleic acids agree that an 'organized and organizing energy' is at work. Constructive energy stands on the threshold of life. Life does not begin, properly speaking, and really enter, until the positive features connected with consciousness make their appearance.

Vital Energy

The second stage I shall simply call vital energy. The vital energy is of quite a different quality from constructive energy, which can also be present in non-living things. Vital energy we feel in ourselves in what we call vitality, or sometimes simply 'energy'. It flows in our blood and it flows in our nervous system. It is the vital fire by which everything alive is able to maintain itself on a different level from all that is dead. As soon as this energy loses its organization in any body, that body dies and the vital energy is set free to go and be reabsorbed into other living things. Let me make it clear that the vital

energy is a material substance not an immaterial principle like the Entelechy of Driesch or Bergson's Elan Vital. Vital energy, like all other forms of energy, has quality, intensity and quantity and differs from lower forms only by its incomparably higher degree of organization. Its role can best be seen in the development of organisms after the fertilization of the ovum.

Automatic Energy

The third kind of life energy is associated with the vital functions rather than life itself. I find it very difficult to choose a good word for it, but I think the right word is 'automatic energy'. This is the energy of all our automatic functioning. One must not think that mechanical things are automatic. The word 'automatic' really means 'self-acting'. Whereas so-called mechanical automata have to be wound up, an animal is a real automaton, that is to say, something which works by itself with a particular kind of energy that makes it possible. It is already a very highly organized, very sensitive kind of energy. All our automatic associations all the automatic work of our senses – all automatic seeing, hearing – all our movements that have no intention or choice in them but are simply what are called sometimes reflex movements – all these depend upon automatic energy. As you know, we spend a great deal of our lives with no higher quality of energy working in us than this. Although this kind of energy is plus on the outside it is minus on the inside. Outwardly it enables us to behave as we do behave, as if we were free and independent beings. But inside nothing is there; inwardly we are still machines. That is why this is written plus-minus and why I call it 'automatic' energy.

Sensitive Energy

The plus-plus energy of life begins to be something of our own, inwardly as well as outwardly. I call it sensitive energy. When I become sensitive to what is happening to me – as soon as I begin to be aware of my thoughts, of my feelings, of my body, my sensations – this energy is beginning to work in me. Without this fourth, or sensitive, energy we are nothing but machines. Up to that point there is nothing but mechanicalness, but as soon as sensitive energy enters, the possibility of separating from our own automatism begins. And to have that possibility means really to be alive. Not alive just as a piece of flesh is alive, for which only the second or vital energy is enough, and not to be alive as

an animal is alive, for which the third kind of life energy is enough; but alive in the sense of a being who is aware that he exists: not only feels alive but knows what it means: who remembers the past and looks forward into the future. All those things come only through the presence of the fourth or sensitive kind of energy, or what we can call the plus-plus energy of life.

I must draw your attention here to a rather dangerous pitfall on the way to understanding ourselves. This is the tendency to confuse sensitivity and consciousness. We are accustomed to regard as conscious the state in which we are aware of the functional activities of sensation, feeling and thought. Psychologists refer to the 'stream of consciousness' whereas the condition is no more than the flow of sensitive energy, Gurdjieff, in his teaching, constantly refers to the error of confusing this with true consciousness which man scarcely ever notices. Sensitivity is no more than the 'fullness of life' whereas consciousness is contact with the central fact of our own individuality.

The four energies of life are shown in Table 3:

<i>Character</i>	<i>Name of Energy</i>	<i>Examples</i>
+ +	Sensitive	Awareness of experience. Separation from automatism.
+ -	Automatic	Automatic sensation and movements.
- +	Vital	Nervous energy, 'vitality'
- -	Constructive	DNA, enzymes and hormones

Table 3: The Four Kinds of Life Energy

Now we come to the cosmic or universal energies. The lowest characteristic of the universal energies, or their minus-minus, is consciousness, which is the highest point of life energy; and the highest energy is that which has originated and now sustains the whole of existence as a self-consistent totality. Such an energy must have its roots beyond existence itself and we shall therefore call it Transcendent. In the very notion of universal energies there is something that goes beyond experience, and we can take it that all the cosmic energies have different degrees of transcendence, but only at the limit of the plus-plus cosmic

energy is existence itself left behind. Another name for transcendent energy is 'Divine Creative Power' but this seems to imply some kind of theistic belief which does not enter the discussion of energies as such. It is enough that we associate the dynamism of all Existence with the highest possible kind of energy.

Conscious Energy

It may seem strange to you that consciousness should be taken as a cosmic rather than a life energy, and you may ask: "How is it that we human beings can have consciousness? How is it that this cosmic energy can belong to us?" But it is really not true that we have consciousness - we can participate in consciousness, but consciousness is never our consciousness, and anyone who has come to some understanding and some real experience of this will know very well what I say, that although our sensitivity - our power, let us say, of observing and separating ourselves - can be our own, consciousness is never our own. Consciousness is always something greater than we are, and we really do not understand how much greater because we do not see that consciousness is everywhere and we can only have a part in it. At the same time, because it is the minus-minus energy among the four cosmic energies, we are able to reach it, and the experience of it does enter into us; but it always has this certain quality of being something greater than we are at that moment that it comes to us.

The second of the cosmic energies is beyond consciousness and has a hidden quality that connects it with the creative activity by which the Universe is incessantly renewed. For this reason, I have called it the Creative Energy. Notwithstanding its transcendental character, it plays an essential part in our lives as the source of the power by which life is generated. It acts through the sex function of man, though few people realize that the power of sex is beyond sensitivity and even consciousness. It might be supposed that this energy is not only conscious but familiar to us all; but we confuse the sensitive energy associated with the experience of sex with the creative energy which transmits the power of sex.

The all-important Creative Energy is the source of all human creativity of which procreation is no more than the vital manifestation. All that man creates in practical affairs, in science and art depends upon the working of the creative energy. In a higher sense, the creative energy is the Great Force of Life by which all existence is pervaded. This is the energy that acts upon us in what Gurdjieff calls the "second conscious shock" by which our nature is purified. It

is the highest energy that plays a direct part in human experience. We know almost nothing about the two highest kinds of cosmic energy, and yet their action pervades everything. Only you must understand that we can never have more than an indirect realization of their presence, because there is nothing in man that can respond directly to these energies, except perhaps for a moment, like seeing a flash of lightning.

The third energy is called the unitive energy, for the reason that everywhere in the whole universe it is by this energy that everything is being constantly integrated and made whole. It is marked plus-minus because it is the inner energy that acts upon every consciousness. This means that in the deepest part of every living creature there is a realization that there is a force that is directed towards our true welfare. At the same time, you must remember that this higher energy is beyond the range of the powers of man. The energy of the Unitive Power can teach us only indirectly. It has to be transmitted through something else, about which we will speak later.

The fourth and highest energy is still more incomprehensible for us, because we can neither know its action nor know how it is organized in the universe. It concerns us only on the ground that a significant whole must contain at least all that is significant in its parts. If dynamism is important on any level, then it must be most important on the highest level. The term 'Transcendent Energy' expresses the belief that if there is movement there is a Prime Mover, if there is Creation then there is a Creative Source. We can put the four cosmic energies into a table:

<i>Character</i>	<i>Name of Energy</i>	<i>Examples</i>
+ +	Transcendent	The Supreme Will.
+ -	Unitive	Universal Love
- +	Creative	Generation and creation
- -	Conscious	Man's 'I', Will

Table 4: The Four Cosmic Energies

We can now make a complete table of all the kinds of energy in the universe:

Cosmic Energies

Transcendent Energy	E1
Unitive Energy	E2
Creative Energy	E3
Conscious Energy	E4

Life Energies

Sensitive Energy	E5
Automatic Energy	E6
Vital Energy	E7
Constructive Energy	E8

Mechanical Energies

Plastic Energy	E9
Cohesive Energy	E10
Directed Energy	E11
Dispersed Energy	E12

Table 5: The Twelve Energies

These twelve energies and the qualities that characterize them, give rise to all the infinitely complex activity of all that exists. This, of course, includes us men and all the qualities of energies that can enter into our human experience. Each one of the twelve is important for us, whether it reaches beyond us like the highest energies, or whether it is simply one of the mechanical energies upon which the work of our bodies depends.

Later, we shall see how they can be transformed, and what is meant by the transformation of energy from one quality into another. The whole secret of our existence lies in the fact that energy of one quality can be transformed into energy of another quality.

QUESTIONS

Q. Do I understand that the highest positive consciousness that we can have, is a negative consciousness on a higher level?

J.G.B. Yes, that is nearly right. What is positive in one direction is negative in the other direction. The highest sensitivity that belongs to life alone is really a denying energy in relation to the cosmic energies. But we do not know consciousness 'from above'.

Q. It acts as a denying force to the higher?

J.G.B. Yes. The diagram suggests that there is in man something more than just life. Man is something more than a living being; he has something in him which participates in energies that are beyond life, that is, in the cosmic energies.

Q. What is the relation between force and energy?

J.G.B. Force comes from the action between energy of one intensity and an energy of another intensity. Force comes from the separation of one intensity from another.

Q. Can you explain plastic energy? I am not quite clear from the example you gave.

J.G.B. No one word will convey all that is wanted. I might also have said adaptive energy. By plasticity solid things are changing the whole time, and yet in some way although they change they still remain themselves, For instance, if I take water in a jug and pour it into a glass, its shape will change, but it will still be water. It is able to do that because it has something in it which enables it to be itself and yet go through a limited amount of change; that we may call adaptiveness. We can recognize plastic energy in what we call deformation. It is the highest property of ordinary things that are not alive: they have a certain power of adaptation, a certain flexibility or plasticity. In order to have that, they have to have something more than just the connectedness that is sufficient, let us say, to make a crystal keep its shape.

Q. Has a human being a certain overall quantity of energy to be distributed between the levels?

J.G.B. No. Each level has its separate account, as it were, although there can be transformation of one kind into another. For example, we have a certain

amount of heat in our bodies. That heat is being lost all the time: it has to be renewed in some way or another. A small proportion of the heat energy in our bodies is converted into directed energy; for example, in maintaining the flow of our blood. But something more than heat alone is required to maintain the circulation of the blood and what is called the general 'tone' of the nervous system. The mechanical activity of our bodies requires the second kind of mechanical energy. We need a certain quantity at a time of directed energy in our bodies, quite apart from the amount of heat energy we need. We were talking about plastic energy just now; we need a certain quantity of this also: the adaptability and flexibility of our bodies depend upon the quantity of plastic energy available. This energy comes from connected energy, but unless there are means of converting one into another, quantity of one kind of energy will not make up for a deficiency of another kind.

Q. May I ask you about the 'voltage' of the highest cosmic energy? If it should contact a person by accident what happens? Or doesn't it touch us at all?

J.G.B. Yes, it can – but it is rather like being struck by lightning! You understand, electricity is all very fine in its way: but lightning is a bit much to cope with. It is like that; this is very, very high voltage, and that is why I say that if by chance it touches someone they have a very big shock from it, and they need a lightning conductor of some sort.

Q. That is exactly what I was going to ask you - what is this lightning conductor?

J.G.B. It appears that an energy of a lower quality can act as a carrier of an energy of a higher quality. But it cannot do so unless things have been prepared in the right way. The simile of a lightning conductor is a very good one: you can have a lightning conductor that consists, let us say, of a band of copper. But that band of copper has to be arranged so that it goes up to the top of the house and it has to be arranged so that the other end goes into the earth. When it does that then it is able to carry off enough of the electricity not to smash everything. In the same way, there is in each one of us a special kind of lightning conductor carrying off these high energies so that although they are present all the time, they are all the time by-passing us. You do not have to make a new lightning conductor, but you have to find out where something has become disconnected in the lightning conductor. If we were not made with lightning conductors all of us would be destroyed by these high energies.

Q. Are buffers lightning conductors?

J.G.B. Yes, of a kind, but they are lightning conductors against much, much milder energies than the creative energy we have been talking about, and they are made for our convenience. Because people do not want to have the kind of shocks that are really necessary for them.

Q. Could you say something about the energy by which living beings grow?

J. G. B. All four kinds of life energy enter into everything that is alive. The highest, sensitive energy, carries the pattern of the particular organism – that is what we call its essence. Through it, the organism is related to the pattern of its own species. It relates every dog to the pattern of Dog; every oak to the pattern of Oak, and so on. And each essence as soon as it is formed, at the moment of conception, or fertilization of the ovum, is formed as a pattern of sensitive energy. The sensitive energy carries that pattern all through the rest of its life. The life energy that I called 'automatic' maintains all the adjustments between this essence pattern and the various processes of life. It forms the regulative mechanism of life itself. It operates throughout the development of the embryo, up to and beyond the moment of birth, right to the end of life. Every living organism depends upon incessant adjustment or regulation which takes place through the automatic energy. The vital energy is associated with the cellular foundation of life in all the various tissues, The lowest of the four life energies is that which builds up the materials required by every kind of organism: they include carbohydrates, fats and proteins, sometimes of immense complexity and always very exactly adapted for particular requirements. The constructive energy maintains the 'biosynthetic' activity of substances like DNA.

Q. Where does the energy of atomic power come in? Is it a very low energy, or a very high fine energy?

J. G. B. It is the connected energy. If that energy is set free it is very much more powerful than the lower mechanical energies.

Q. Can you say why you use the word 'sensitive'? It is rather an unusual use of the word, I think.

J.G.B. I could have used a term like 'psychic energy', but this has misleading associations. Sensitivity is a property shared by all the higher forms of life and, I personally believe, by all life even down to the level of viruses and protoplasm itself. When it is sufficiently concentrated that is when its intensity reaches a certain degree, it produces awareness. This is very easy to recognize with the sensation of heat and cold. We are usually unaware of the state of our skin, but when the temperature rises or falls beyond well-defined limits we say that we 'feel' hot or cold. If it goes further still we 'feel' pain. Sensation and pain are different degrees of sensitivity.

You must also understand that sensitivity can be organized. Let us go back to the question put to me just now: what is it that directs the development of an organism and what is it that, when an organism is developed, maintains it more or less true to its own pattern? Sensitive energy does that because it is

able to respond both to energies finer than itself and also to energies lower than itself. That is what I mean by 'sensitivity'.

We can confirm this in our own experience. My eyes are looking all the time and I am seeing the door opposite, but I do not notice it. When I notice it there is a complete change, and I realize that a new quality of energy is present in me that was not there before. What makes it possible for me to notice is that the energy of sensitivity has been added to the bare energy of automatism. I may be speaking, but it is my automatism that speaks, and I may not be sensitive to what I am saying. Then something changes in me and some of this energy of sensitivity is added; I then become aware of what I am saying. When that energy is used up or goes off into something else, I may still go on speaking, but it is only my automatism speaking. I no longer hear what I am saying. This does not mean that sensitivity totally disappears – if it were so we should die – but that its intensity has fallen below the threshold of awareness.

Q. Why did you say that the four highest energies are higher than life? Are they not higher aspects of living?

J.G.B. By 'life' I mean what we usually call life; that is, the terrestrial existence of plants, animals and men. But there is something beyond that. To be conscious is not simply another aspect of life; it is something that is altogether more than life.

Q. But it is contained in life.

J.G.B. On the contrary; life is contained in it. Life cannot possibly contain consciousness; it is much too small a vessel to contain consciousness. One can be dead and still be conscious. But one cannot be dead and still be sensitive. If you can understand this you will understand a great deal about what happens to us when we die.

LECTURE II

THE TRANSFORMATIONS OF ENERGY

Our next task is to study the transformation of energies. By this is meant the passage from one quality to another quality. The main transformations are the conversions of any one of the twelve qualities into a higher or lower quality. The upgrading of energy is called anabolic transformation and the down-grading of energy is called katabolic transformation.

Not all energy changes are, in the true sense, 'transformations'. Changes of intensity without change of quality are occurring all the time. For example, a hot body exposed to cold air soon cools down. The intensity of thermal energy diminishes; but, whether hot or cold, heat remains heat and does not change into another quality. The transformations of energy differ in several ways from changes of intensity. The most important difference is that they never occur independently. For one quality of energy to be transformed into another it is always necessary that a third kind should act on it. One of the simplest examples is the conversion of the energy of motion into heat. This seems to occur spontaneously whenever a moving body is brought to rest – as, for example, when we put on the brakes of a car. But if there were no brakes the car would not slow down and there would be no heat. So the connected energy of the material from which the brakes are made must be present so that the directed energy of motion should have the means of producing heat. Such an arrangement is katabolic, for heat energy is a lower quality than the energy of motion. For anabolic transformations, it is necessary to have special conditions that I shall refer to as apparatus. We can define 'apparatus' as the means whereby anabolic conversions of energy are made possible.

Before we begin to study examples I want you to remember that each of these twelve main qualities or categories of energy has its own sub-divisions, so that when we meet with a particular energy it is usually a mixture of several different shades of quality. This makes the study of the transformations of energy very complicated; so, in order to be able to think about it profitably, we have to simplify and treat mixtures as if they were pure energies, and also disregard many subordinate transformations leading in different directions. But you must not forget that this simplification is artificial, and that, in the real world, the transformation of energy is very complex.

In this lecture, I shall examine five or six examples of transformation. In one or two cases, I will show you how the transformation of one quality of energy into another quality may bring about a whole lot of other secondary transformations. The transformation of energies was called, in former times: "the separation of the fine from the coarse". We are inclined to think of that as

improving or raising the quality of energy but we must not forget that as one part of the energy is raised in quality it inevitably happens that another part is debased. If some goes up, some must also go down.

Another thing I want to say before I begin to discuss examples is that we must not forget that energy is not what we see. Energies are hidden away; they are not in the same dimension as the things which we touch, handle, see, measure. There can, for example, be two substances that may look very much alike, and even when tested physically or chemically seem to behave in much the same way; but one may contain energy of a very different quality from the other. In our bodies, there are a relatively small number – by that I mean something like forty or fifty perhaps – highly specialized chemical substances, each of which carries a particular kind of energy essential for maintaining the delicate equilibria of our organic and psychic existence. If one knew about them only chemically, one would not suspect that they had these extraordinary properties. Each one is able to carry or to support a particular quality of energy because it is made according to a very precise pattern. It is not the substance itself which is the energy and it is not the substance itself which is important for our study. For example, there is one particular substance, called adenosine triphosphate, that exists in the bodies of all animals, and has the property of being able to store and make immediately available at any moment a very large quantity of a particular energy that can help in building up the tissues of the body and even higher substances. I think it is safe to say that no chemist, given a sample of adenosine triphosphate to examine without knowing its biological significance, would suspect that it has this extraordinary property of being able to act as a medium for transforming the energies necessary for life. There are in our blood and in all our tissues many such substances that help in the conversion and transformation of energy. They include the substances which go by the name of 'enzymes'. These are very complex, and millions upon millions of quite different kinds of such substances could exist; but just a very few of them are present in our bodies to carry the particular energies required for the life of our organism. If you study metabolism –that is, the transformation of energies in animals and plants – you will find references to particular chemical substances that have certain properties in the working of the organism. But when you read carefully, you cannot help seeing that these special substances must have more in them than a particular chemical composition. Every year this becomes clearer. When I first gave a lecture in 1930 on the subject of energies, I spoke then about this property of certain chemical substances that enables them to act as the carriers of different qualities of energy. In the short time of twenty-six years since I gave that lecture, such progress has been made in the branch of science called 'biochemistry', that what then seemed very strange has now become a commonplace of science. Two or three chemists who came to that lecture were so shocked by what I said that they went away and never came again. But biochemists today would not be at all astonished at what I have just been saying – though you will realize that the idea of a whole scale of energies

ranging from heat right up to the Power that Maintains the Unity of Existence must necessarily go beyond any and even all branches of natural science.

Now let us examine a few examples of the transformation of energy. I will take first transformation of Energy 12 into Energy 11: that is, transformation of the dispersed energy – which is the lowest, heat – into directed energy, which means energy which can be used for doing mechanical work, whether it is the work of our muscles in our bodies or the work of engines. Heat alone will not do any work. In order to get work from heat it is necessary to have two different sources, one hot and one cold. Then the flow of heat from hot to cold acquires a direction, but to turn this flow into mechanical energy a particular kind of apparatus is used, called a heat engine. But in that case the heat has already been divided into hot and cold.

Supposing that there were a certain quantity of heat which was not divided at all, without any difference of intensity – could any work be got out of that? With an ordinary heat engine no work could be got, because heat can only flow from what is hot to what is cold. But what is heat? We spoke about it last week. It is all the energy that is stored up in countless millions of millions of particles – in air, solid bodies, liquids – moving, vibrating and rotating at random. The faster they move, the more energy they carry and the 'hotter' they are. Because they are always colliding with one another and with the walls of their container, the particles of a gas quickly share any surplus energy and reach what is called 'equipartition', in which no further flow of heat occurs and therefore no transformation is possible. However, it was shown nearly a hundred years ago that if one had a quantity of gas in this state of equipartition, it would be still possible, by the use of intelligence, to get work out of its heat, even though the intelligence had no direct power of doing physical work. That is very interesting, because it was perhaps the first time in the history of modern science that one of the fundamental principles of the transformation of energies, as we understand it in our system, was formulated. The idea was put forward by the great Scottish mathematician Clerk Maxwell. He said: "Suppose we had a box and put a wall down the middle with a door so light and free from friction as not to require any work to open and shut it, and small enough to catch individual molecules of the gas.

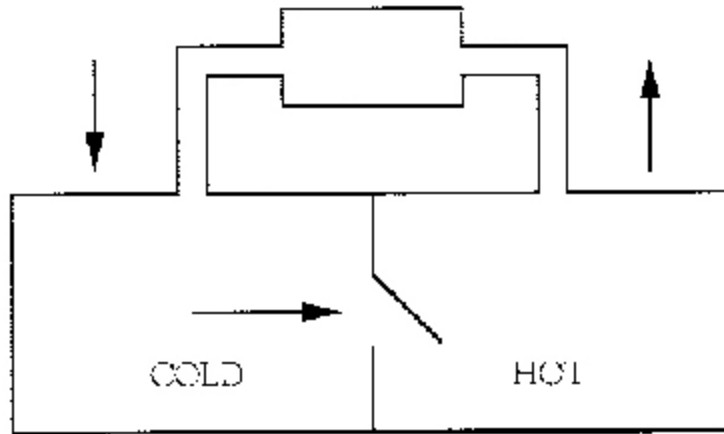


Figure 1: The Sorting Demon

Now suppose there is a being – a ‘sorting demon’ who does not have to do any work but is able with automatic energy, E_6 , to open the door or to close it according to whether he sees fast or slow moving particles going past him. Sometimes they move in all directions, sometimes one will come to this door. If the sorting demon opens the door to let the fast ones go to the right, and if he opens it to the left for the slow ones, the right side will get hot and the left side will get cold.”

When the gas on the right side has grown very hot and that on the left very cold, it is possible to open the pipe at the top of the box and pass it through a heat engine to get mechanical energy. In this way it would be possible, by the action of E_6 on E_{12} to get a supply of E_{11} . At the same time, E_{12} will have fallen to a lower intensity than before. This is a simple demonstration that there can be a transformation of energy in a suitable kind of apparatus by the action of an energy of a higher order. The action can be shown by means of a simple diagram:

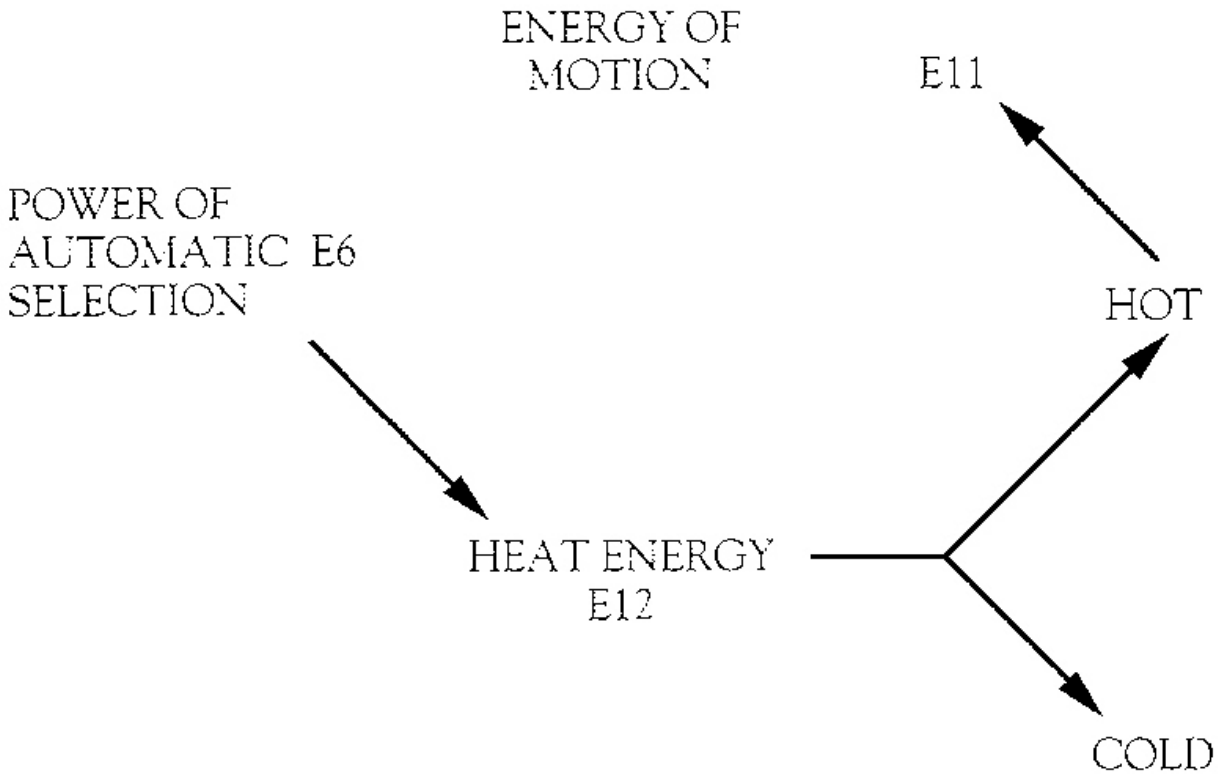


Figure 2: The Power of Thought

Now we shall go forward a step to another kind of transformation. The energies that we call E 11 are carried by simple substances like air, water and sunlight. In a very special kind of apparatus that exists in the green leaves of plants there is a means by which a special substance, having the density of E 8, acts on the mixture of air, water and sunlight and produces from it E 10 – in this case various carbohydrates, which are mainly cellulose. In the process, E 12 energy is absorbed in the form of heat. At the same time there is produced some E 11 in the form of oxygen and water. The process is called 'photosynthesis'.

The transformations of photosynthesis are represented by the diagram of Fig. 3:

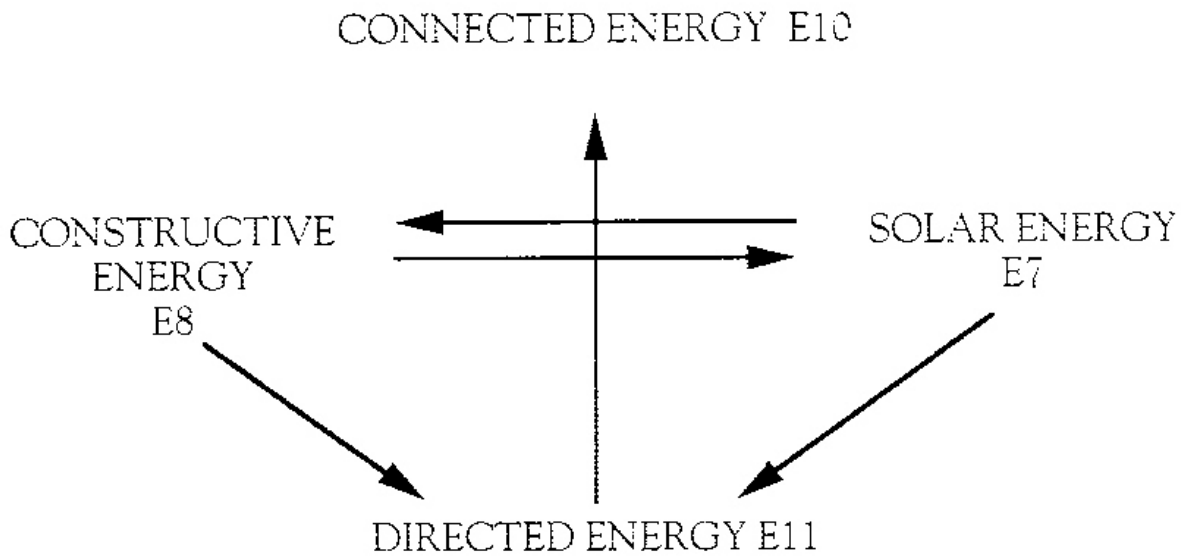


Fig. 3: The Basis of Life

Photosynthesis is perhaps the most important energy transformation that takes place on the surface of our earth, All life depends upon it; it is possible only in the presence of certain particular substances that belong to that group of energies called E 8, energies of a constructive power, the power to build up. Last week I spoke about catalysts, or substances that are able to promote or accelerate changes without themselves being involved. The particular E 8 which is mainly responsible for photosynthesis is the green pigment chlorophyll, present in all green vegetation on the earth and in the sea. An extraordinarily large proportion of all the sunlight that falls on the earth is absorbed by green vegetation – four-fifths of it in the sea and one-fifth on the land – and it passes through that transformation with water and the carbon-dioxide in the air.

Something like a hundred thousand million tons of carbohydrates are made every year on the surface of the earth by this one process of transformation. This is the first example we know of a cosmic apparatus for the transformation of energy. The chlorophyll in the cells of all green vegetation is combined with substances of the E 8 and E 10 qualities into a particular arrangement. It is connected with fats and proteins and cellulose tissues, all of which build up a particular kind of apparatus that enables this really prodigious transformation of energy to be accomplished. Photosynthesis transforms energy of a quality that exists all over the surface of the earth into a quality that could not be formed independently. It is this alone that makes life possible on the planet. Life needs connected energy (E 10) in a particularly concentrated form. The

energy made by this transformation is the foundation of the food of all plants, of all animals and all men. Very small quantities of food are made by bacteria and by other processes than this, but the transformation shown in Figure 3 is the main cosmic process for the preparation of food for all living things on the earth. And no one has yet found

a way of producing this process without the help of some higher energy of the quality I call E 8. The process can go in the katabolic direction – E 10 can degenerate into E 11 – automatically, without any help of higher energies. That is the destructive process by which we burn any vegetable or animal matter in air or oxygen. That is the reversing of the arrow, by which such matter turns back into air, water and light. But to unburn, to produce the anabolic concentration of energy that is required for life, is possible only if there is some higher energy to act as the third force in the process.

The third example I shall take, is the process by which we digest food. Food belongs to the E 10 energies. You must not forget what I said: that it is not the particular chemical substance – potato, meat and so on – that constitutes food, but the presence in it of energy of suitable quality that has the power of connecting things and building a body. When food (E 10) is taken into the body there acts on it substances of the E 8 quality. These are the ferments or digestive juices that meet the food from the moment it enters the mouth until it has been liquified and turned into what is called chyle – that is, E 9 and is able to pass through the membranes of the intestinal tract and enter into the body. When this is done, E 10 is split up and the resulting energies go in several different directions. Part is just stored up in the body in the form of substances that simply contain this energy in easily disposable form, E 10 substances such as glycogen and fats. Part of this energy goes downwards to become E 11 – that is, the directed energy that is used for the working of our muscles. This is the energy that enables our bodies to work as machines, as heat engines. It is muscular energy. And this again, as it is used, goes on down into E 12 and simply becomes the heat needed to keep our bodies warm. In ordinary biological language all that is called 'katabolism', or the downward movement of energy: it is what I have called katabolic transformation. From this energies of lower qualities are produced that enable the body to work. But at the same time a proportion of these energies is built up into the mobile energies, E 9, the energies that give our bodies their mobility, their elasticity. They enter into the tissues of the body. One part of the E 9 goes into building up the tissues of the body. During childhood a large proportion of the E 8 energy has to go to this, as the body is growing, but in later life also there is a constant need of the body for E 8 to ensure the renewal and repair of its tissues. Still another part, this time under the influence of the vital energy E 7 in the organism, is turned into substances of quality E 8. This produces the biologically active substances that regulate the life of the body. We can now put this in the form of a diagram:

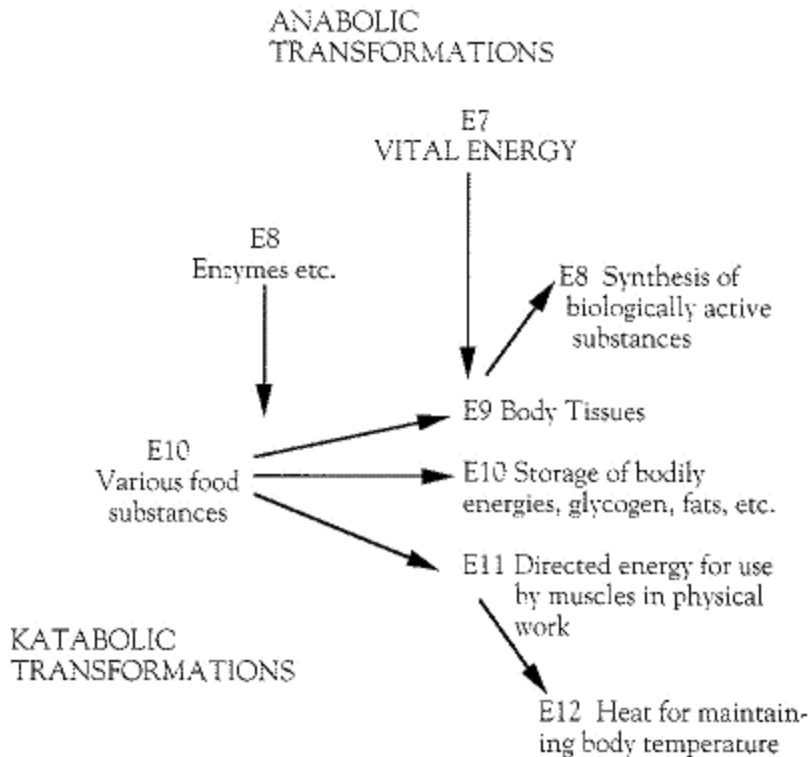


Fig 4: The Primary Metabolism of Men and Animals

This diagram will help you to see something of the complexity of energy transformations. Whenever energy of a higher quality is produced, energy of a lower quality has always to be produced with it. The diagram summarizes all that is ordinarily known about the metabolism of food in the animal body. Although it looks complicated, if you were to read a textbook on metabolism you would see what a wonderful simplification is achieved when one studies metabolism in terms of energies, instead of chemical substances, I have marked the lower part of the diagram as katabolic and the upper as anabolic, the meaning of which is particularly easy to see here.

The animal organism, which includes our human organism too, is a special cosmic apparatus for the transformation of energy. You will note that it transforms energy of a higher quality than those which are transformed by photosynthesis. The plant begins with E 11 and builds it up into E 10 and also into higher energies such as those in proteins. You must realize that we depend on plants for our supply of certain substances of quality E 9, as we are not able to make them in our own organism out of simple substances of quality E 11. If I had made the complete diagram of the plant metabolism it also would have shown a transformation into five different qualities of energies. In "All and Everything", there are many references to 'cosmic apparatuses' – for the

transformation of energy, and I want you to see now what is meant by a cosmic apparatus. It is a particular construction in which energies can be brought together so that there can be a transformation to produce both higher and lower energies. From the point of view of our study – that is, of what we call Work for the harmonious development of man – it is of course the anabolic transformation of energies that is of main interest to us. But we must not forget that there is always a price to be paid. All the anabolic, all the upward, transformations of energy are always made at a price of a certain proportion of the energy going by way of katabolism to a lower level.

Let us take the transformation of energy one more stage. I will first show you the corresponding diagram:

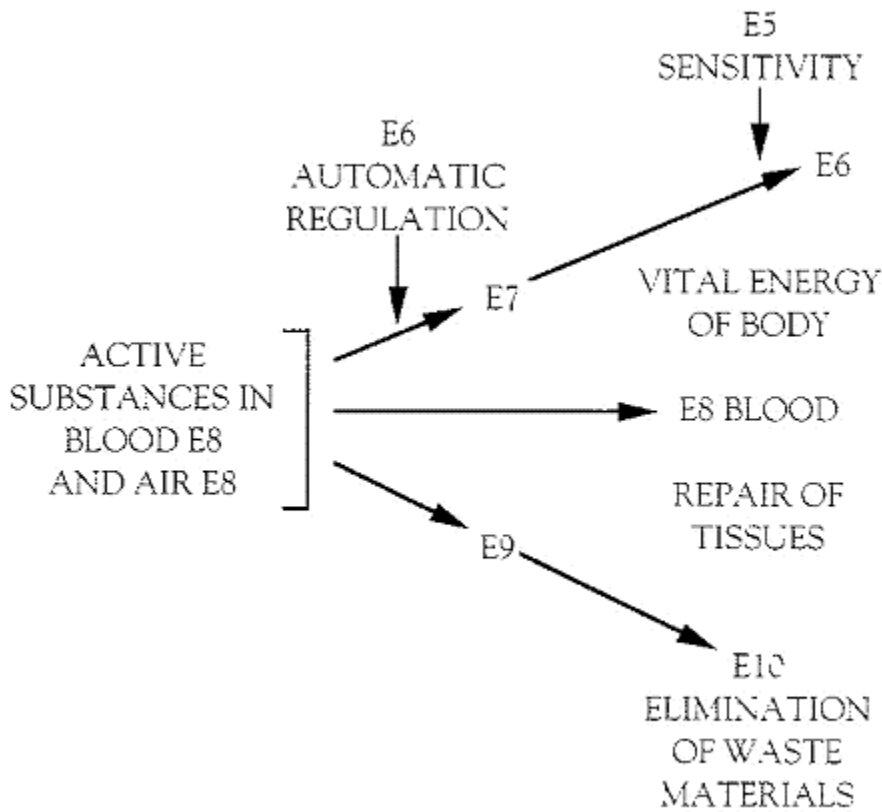


Fig 5: TRANSFORMATIONS IN THE BLOOD

Here we start from E 8. The apparatus for the transformation of E 8 is the blood. There are active substances carrying energies in the blood that can be

transformed into still higher energies; but now we are beginning to pass from the passive energies to energies that have the property of awareness in them, and such energies can be produced only at a cost. This means that the transition at this point requires special conditions in the apparatus. The transformation of the active substances which have reached the threshold of life as enzymes and hormones can pass to a higher level only with a special process called 'blending'.

It is possible to express this in terms of the Law of Sevenfoldness or octaves, and to say that here at this point there is an interval in the octave or the place where the octave stops and cannot go forward independently. An outside shock is needed. The transformation of E 8 in the blood is possible only when there is a blending of active substances in the blood with active substances in air, both having the quality of E 8. Such energies have in themselves a building up or anabolic power. But for that anabolic power itself to be transformed into something higher, it is necessary here to have an action of E 6 upon it. This is the action of the automatic regulative mechanism of the body, which has to be brought to bear so that E 8 can be transformed into E 7 which supplies the body with vital energy. The vitality of the body comes from the transformation of the active substances in the blood and the active substances in the air through the help of the energy of the regulative mechanism of the body. Some of these E 8 substances remain as they are, vivify the arterial blood and endow it with power over the body. Another part of the E 8 goes down into E 9. This is exactly what is needed for repairing the tissues that are constantly being used up in the activity of the body. Part is katabolised to E 10 and goes into the discarded materials that are excreted from the body. These E 10 energies enter again into the cycle of transformations of plant life. This is very important for the economy of organic life, but we are mainly concerned with the upward, anabolic movement. The vital energy, E 7, under the action this time of sensitive energy, E 5, is transformed into E 6 -that is, automatic energy. This is done through the sensitivity of our organism to all the processes that are going on in it. This can be called 'organic self-experiencing'. What is called the 'tone' of our nervous system and the state of activity of our blood is maintained by this E 6, You will note that this diagram has gone beyond the primary metabolism by which the body as a body is kept going and has entered the vital transformations. Through the mechanism shown in this diagram our bodies become something more than mere chemical apparatuses. They become vital apparatuses for the transformation of the energies of life itself.

I will pass over the next step and begin now with E 6, which is automatic energy. We know about it chiefly in all the automatic working of our functions; our automatic thinking, our reflex movements, and the whole instinctive automatism by which our body is regulated. It includes also all the automatic entry of sense impressions – of sight and of hearing and touch. These are all different varieties of that quality of energy called E 6. E 6 is the third kind of food for man.

The ordinary working of the human and animal organism is very simple in this case. These energies simply enter the body as E 6 and produce all reflex and associative activities. This means that there is no ready-made apparatus for transformation of the E 6 that comes to man through his senses. E 6 does not have to be transformed for the ordinary purposes of life. It is able to do the work that is necessary for the body while remaining as E 6 – that is, by supplying the need for the automatic energy by which the bodily functions are regulated. But of course it is absolutely essential that we should take in this energy the whole time, because otherwise there would be nothing to replenish the automatic energy of the body, which is used up much faster than can be produced from other sources. All the time the energy of E 6 is being fed into our bodies through the nerve endings in the skin, through the special senses of seeing, hearing, taste and so on. At the same time, the transformation of E 6 into higher qualities is also possible, because with the E 6 – that is, with the impressions that we receive through our senses – there are also energies of a higher kind. Only here it is necessary to understand that the transformation can only take place if there is some of the higher energy of consciousness – that is, E 4 – in order to transform E 6 into E 5.

The various anabolic and katabolic transformations of E 6 are shown in Fig, 6:

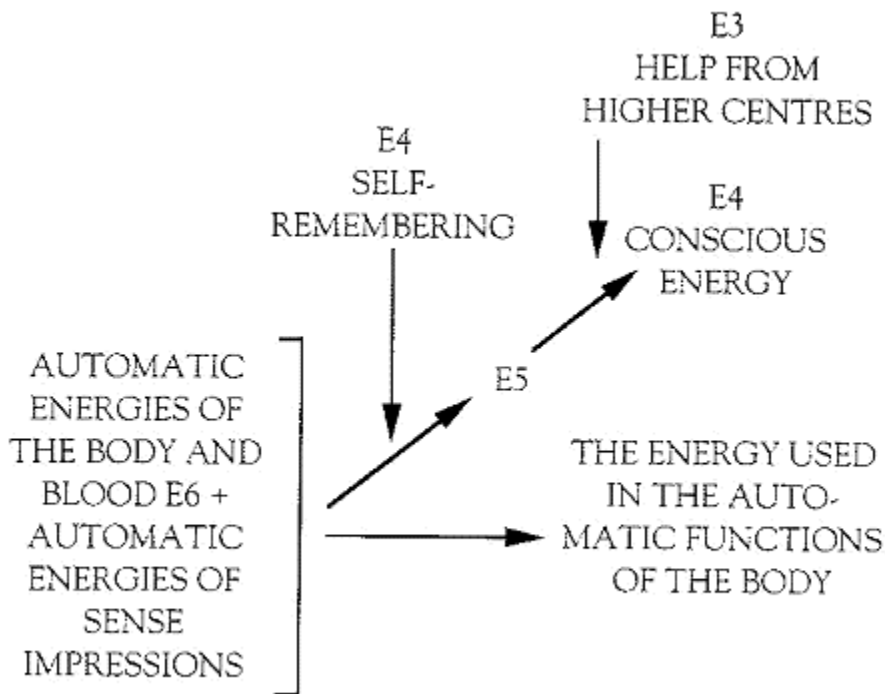


Fig 6: SELF-REMEMBERING

E 5 is the energy of sensitivity, and in order to transform automatic energy into sensitivity we need some energy of consciousness. That is why this is called the diagram of Self-remembering. It shows that when some energy of consciousness is brought into contact with the energy of impressions we make in ourselves an apparatus for the transformation of E 6 that very greatly increases the supply of sensitive energy, E 5. That which comes from the transformation of the other foods is quite insufficient for some of the purposes we shall be talking about later. You must remember, in comparing this diagram with the other ones, that the first two stages of metabolism or transformation of energy are maintained by cosmic apparatuses which form part of the organism not only of man but of all animals. All warm-blooded animals like man have the metabolic apparatus developed as it is in us. But now we have come to an apparatus which is characteristically human and not to be found in animals. You must also understand it is not to be found in man either, unless he knows how to produce it in himself or unless something happens to him that 'injects' the energy of consciousness into him, involuntarily. There are the various emotional shocks that come to us in life, without which this transformation of E 5 into E 6 would not take place in us at all. And because it is necessary for the purposes of life that there should be a small, but not negligible, quantity of energy of sensitivity and also of the next higher energy E 4 in man, there is provided something that should rather be called a 'cosmic contrivance' than a 'cosmic apparatus'. It is not part of the ordinary construction of a being like man that he should be dependent upon unexpected, involuntary shocks to have moments of consciousness, and that is why I call it a 'contrivance'.

In order to transform the energy of sensitivity into consciousness, there must be a certain action of the creative energy E 3. This is a universal, cosmic energy that is always present and therefore a certain transformation of E 5 does occur. Consequently, the result of an involuntary emotional shock is to produce some energy or both sensitivity E 5 and consciousness E 4.

The diagram here represents two different things. It first represents the occasional involuntary awakening of consciousness in man as a result of some external shock, painful or joyful a shock which is more intense than any of his ordinary experiencing. Producing E 4 and E 5 by this means was given a very good description by Ouspensky he called it "living on pennies you pick up in the street", which only gives you a very low standard of living. The second significance of the diagram is that it represents voluntary self-remembering. Only by self-remembering can we get sufficient output to give us energy needed for purposes other than just the automatic functioning of our bodies. Man has to learn how to 'remember himself'; whether it is called by that name or by any other name; he has to bring himself voluntarily under a certain kind of experience that makes him aware of the influences acting on him.

The highest energy produced from E 6 is the E 4 shown at the top right hand corner of fig. 6. This is produced by a process of which we are usually not conscious at all. It is the action of the Higher Centres that transmit the universal creative energy E 3. We have, at present, no material for studying this 'higher anabolism' of impressions, but it is needed for completeness as it shows how the organism is supplied with the E 4 needed for life.

Now we come to the last of the examples I will give you of transformations of energy. This time it is the transformation of E 4; that is, consciousness itself. As I have just been saying, there is always produced in man from time to time a certain quantity of conscious energy of E 4 as a result of various sharp intense experiences; but for the full perfecting of man it is essential that he should have something in him that is able to respond to the higher energies, and especially E 2. That means that if there is nothing ever produced in him higher than E 4 he can never become a free individual, what is called a being in his own right. Therefore the anabolic transformation of E 4, of the energy of consciousness, must be the aim of every religion, of every teaching that is concerned with the possibility of man is reaching the higher worlds of universal consciousness. For this, according to the same relationship, it is necessary to have some energy of E 2; that is, energy of cosmic love, which is, of course, not what we usually understand by 'love'. That E 2 energy is always present everywhere and in everything. Therefore it does not need to be brought. It is there, but the ordinary man is not open to it. The energy of consciousness always produces a feeling in him of 'I' and the possibility of the transformation of this energy is something really that man is most afraid of, because he feels if this transformation does take place in him, that he is going to lose his own 'I'. If he is able to open himself to the action of Cosmic Love this produces some of the energy of the third kind, which is the energy of the creative power which is the real 'I' in man. This points to a very strange situation which always exists in people; that is, that the energy which gives them the illusory feeling of 'I' is the energy which has to be transformed in order to produce in them the real and permanent I. From the point of view of our ordinary energies, E 3 is outside the range of consciousness and therefore appears like unconsciousness. It is only E 3 that gives a being freedom. No one has the possibility of doing, unless he has sufficient E 3 energy in him. By the help of E 3 a man can be free from his own mechanism. But in order to have E 3 it is necessary that the energy of consciousness should be transformed and there is no ready-made apparatus for doing this.

The situation is shown in the last diagram:

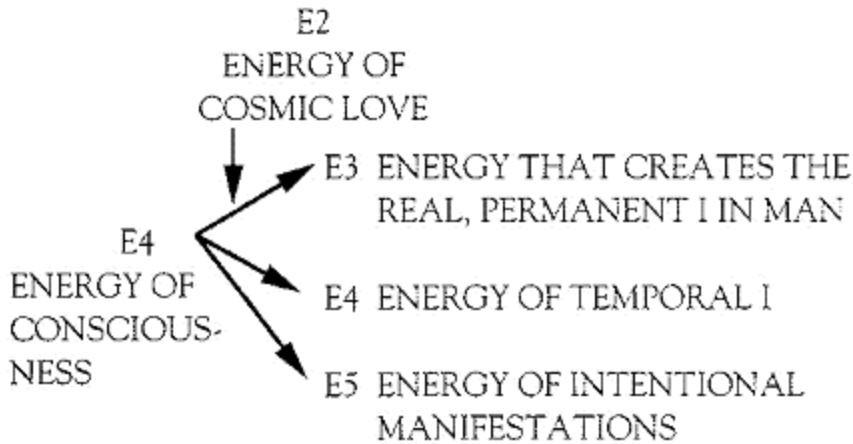


Fig7: THE TRANSMUTATION OF CONSCIOUSNESS

This diagram is sometimes called the 'triad of help'. It is sometimes also called the symbol of the transformation of the emotional life of man. The best name is the transformation of consciousness because it is through this energy that the possibility comes for man to rise above human levels. It is not by man's own power but by his being able to open or submit himself to the action of the higher E 2 energy that this final transformation takes place.

I have used these six examples to illustrate transformations of energy, but I specially want you to grasp the principles which are involved in this. First, energy is an invisible power. It is not this or that chemical substance or this or that material: it is a particular quality. Second, the transformation of energy from one quality into another always depends upon the mutual action of two or more energies. Third: for this mutual action there has always to be a special apparatus, something which holds them together while this action is taking place. We have spoken today of the photosynthesis in green vegetation. This is a great cosmic apparatus on an incomparably greater scale than individual human life. Others, like the first one of the transformation of heat, are the kind of apparatus that the intelligence of man is able to devise. There are other apparatuses that are made naturally as part of the whole cosmic economy. The apparatuses for the transformation of energy in the bodies of animals and men are examples of those. There are again other apparatuses that are only present in us as possibilities. Those are specially the apparatuses for the transformations of higher energies that are formed only through the conscious intention of the being in whom they are present.

Questions

Q. When you spoke about the first example, you brought in E 6 for the transformation between E 12 and E 11. Is it not a very high energy for such a purpose?

J. G R. Yes, that is right, I did. The reason is that the sorting demon apparatus is not cosmic. Only cosmic apparatuses work with full efficiency. This means that they work where energies that are separated by only two gradations can act in order to produce the middle one. But the kind of apparatuses that we men can make are never as efficient as that. They are always much more wasteful in the qualities of energy they use. That is the difference.

g. Do energies E 1, E 2 and E 3 exist in time?

J.G.B. It is better to say that they are not subject to time conditioning in the same way as the life energies are. There is not a kind of vessel called 'time' that things either are 'in' or 'not in'. Rather than speak of 'existing in time' it is better to ask whether they are 'subject to time' or not. I would reply that they are not subject to the laws of time in the same way as the lower energies are. This applies also to the energy of consciousness. This is something you can verify for yourself. When you learn to distinguish the energy of consciousness from that of sensitivity, you will discover that consciousness does not 'move' in the way sensitivity moves. We experience its presence as the "still and silent place in the centre". Also we find that consciousness is connected with itself in a way that is quite absent from sensitivity or automatism. We cannot study creative energy in the same way; but whenever it influences our lives – as it frequently does – we become aware of it as a result, never as a process; in other words, it gives no indication of being subject to time.

Q. If I am sensitive to impressions does that mean that the energy of consciousness is present in me at that time?

J. G. B. Consciousness can be noticed at moments of transition from automatism to sensitivity. There is a moment that we call 'waking up'. At the moment you wake up, some energy of consciousness acts. But it is only a very, very small quantity, not enough to keep the whole process of transformation going and most people overlook its importance and allow the moment to pass unused.

Q. Would it be any use trying to hold on to being sensitive?

J.G.B. Why not? Certainly it is useful. Only that by itself won't give you energy of consciousness,

Q. How would one recognize creative energy?

J.G.B. Only by – and I must give a very strange answer to this – only by the realization of your own nothingness. When there is a real consciousness of our own nothingness, not just a state of depression, we can come under the action of the third gradation of cosmic energy. In front of that creative energy, we are really nothing; and therefore, as soon as it appears in us it becomes obvious to us that we are nothing at all. But I must warn you that many people think that they have had the experience of their own nothingness, when they have had some unpleasant shock and are a bit depressed. It is not the same thing. Also, as I said just now, all that we can be aware of is the result: creativity transforming automatism into consciousness.

Q. It seems to be such a positive scale – one good thing leading to another good thing – what about the creation of negative things? For instance, is there any E3 in malignant diseases?

J.G.B. I said there is the degeneration as well as transformation: katabolism as well as anabolism. It is possible to say that all disease comes from the action of energies on the wrong level. It is quite true that if a very high energy acts on a low level – without the proper apparatus for transforming it – it may not only produce disease, it might even immediately kill.

Q. You said, at the beginning, that all transformations of energy took place at a price, but you did not mention the price in your two examples.

J.G.B. Of course I did! I said you have to lose your feeling of "I." Isn't that a price? Wait until you have to do it. It is a big price.

Q. How is it that we must understand these transformations in terms of triads? It seems to me, in connection with chlorophyll, that you have five energies which work at a point. It seems as if it is one energy acting on another producing three others, or several others.

J.G.B. That means there are several actions of different kinds. I also showed in the diagram that there is one part that goes through unchanged. In every one of these diagrams the transformation is only of a part, and there is a very big law in that. Always there has to be division into three. Part goes up, part degenerates, and part remains the same. It can be said that there are "anabolic triads," "katabolic triads," and "stationary triads."

Q. Last week I asked you about the relationship between quantity, quality, and intensity. What I was trying to ask was: what is the ratio of the relationship between quantity, quality, and intensity? Can you use the apparatus to change all of these? I am not quite clear what you mean.

J.G.B. First, about quantity; you can understand this from what I have just been saying about the partition. There is not any change in the total quantity

because energy is indestructible. All changes of quantity are simply separation, part going right, part going left, part going up, part going down, part remaining the same. But the total amount is unchanged. That is the principle of the indestructibility of energy. The intensity of energy in these transformations is very largely a matter of determining whether the transformation can take place at all. You may have the energy of the right kind, but if the intensity is not enough, then nothing happens. For example, there is always a certain amount of energy of consciousness present in us, but unless it becomes intense enough, unless it reaches a certain intensity, nothing happens at all. That is the relationship there. It is the condition of whether the action takes place or does not take place. It is like what I said last week about boiling an egg. Boiling an egg is a process of energy transformation. It is very simple. The change that takes place in the energies of the egg has to do with its possibility of becoming a food. But what is required to transform it is a certain intensity of heat, not too little, not too much.

Now, for the other part of your question. You speak of apparatuses. That really is the most important thing I wanted you all to see. In every single one of these examples, the energies have to be brought together under definite conditions. The example I gave of Maxwell's sorting demon requires a particular apparatus. If such an apparatus could be made to work efficiently, then we should no longer be dependent on any outside source of energy. Again, look at the second example. All the time, in the world, all over the earth, there is carbon dioxide in the air, there is water vapour in the air, and there is sunlight. It falls on everything, but a most extraordinarily constructed apparatus is required before there can be the photosynthesis of carbohydrates. No one could have invented this; it is a hundred million times more extraordinary than any apparatus any man has ever devised. There are many things we can do only by copying the wonderful apparatuses nature uses for her transformations. It is the same with the transformation of food in man. I show you a general diagram, and you must understand, when it is worked out in detail, that each variety in the quality of food requires to be worked on by a particular active element in a particular order. The food has to be brought into a special state of fluidity at which it is able to pass through the apertures in the lining of the intestinal tract that are precisely regulated to allow just that and nothing else to pass through. And it is not only these physical apparatuses; you must understand that the apparatus for self-remembering is even more extraordinary. It is a real miracle. How could one ever suppose that some kind of animal could arise on earth that is able to remember itself? And, what's more, not being able to remember itself because it is automatically made so, as perhaps angels are, but that can find out how to produce a state of self-remembering through its own voluntary efforts. Here again, a special apparatus is needed to make this possible.