

Consciousness, Radiation and the Developing Sensory System

by

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A. Introduction

Man is always in a stage of transformation, physical, mental and spiritual, on both the personal as well as on the collective level. At present in society, one can see many surface manifestations of what appear to be profound transformations in the various bodies of man. It seems an imperative that we begin to perceive the deeper meaning in these changes. This paper makes an attempt to clarify the picture somewhat.

Many thousands of years ago, mankind found itself on the shores of the Mediterranean and built ships to explore its environs. They weren't very good ships, there was little knowledge of navigation and great dangers were ever present. Initially, few of the ships returned and many stories of the great dangers of that space "out there" developed. However, with the passage of time, continued courage, careful observation and much thought, reliable ships and navigational instruments were developed, the dangers still existed but could be controlled, and man gained reliable understanding of this earth's physical space. Of late, we have even begun the conquest of physical space in those worlds closest to the earth.

Now, man once again finds himself clustered on the shores of a vast domain

but now it is not physical space that beckons to his adventurous spirit but other spaces (called inner space by some). Once again, he moves forward with an inadequately constructed vehicle and with poorly developed instruments for orienting himself in the frames of reference of these new spaces. Once again, there are a variety of dangers awaiting him. However, once again we can anticipate that he will eventually overcome all these difficulties and gain reliable procedures for cogniting and mapping the furthest reaches of these new domains.

On this path of exploring these spaces which involves transforming self, it is a truism that we must first come to understand self. This is no small task because the goal has many aspects, the understanding takes many forms and manifests itself at many different levels of our being. We suffer from the difficulty of not reliably perceiving information patterns in those dimensions of the universe which correspond to the deeper levels of our being than the physical because these information channels have only been partially constructed in most of us. In addition, we suffer from the inadequacy of properly describing these patterns of information because we have developed only a mode of expression tailored to the physical dimension ("apples," say) and must now describe attributes of another dimension ("oranges," say). Thus, we must describe "oranges" but have only the language of "apples" at our disposal. We are limited to analogies and must recognize that something will always be missing from our description.

We have all heard the expression, "When an idea's time has come, nothing on earth can stop it!" Well, we are at that moment in time when such an event is happening - a transformation is occurring in man! Future mankind will probably look back and say that the beginning of the Psychic Age of Man occurred around the early 1970's.

The task in front of us is too large to be fully dealt with here; however, one might hope to shed some light on the situation by selecting a set of suitable models to aid our perception. As is well known, models are merely visualizations of the phenomena which serve as aids to our efforts; i.e., they are the vehicles via which we gain fuller understanding. As the models become more discriminating, they become targets against which we test the accuracy of our reasoning and our understanding. Of course, any model will eventually be proven to be in error at some level of detail; however, its primary purpose is to provide a sufficient grasp of the subject to trigger a suitable set of questions or experiments needed to probe deeper.

The path of this paper is to first present a model of how we evolve in response to the information radiated to us from our environment. Here, Appendix A presents a simple picture of radiation both in the physical dimension and in other dimensions of the universe. Next, we shall consider the relationship of information theory to perception and to reality. This is followed by a discussion of certain time and space aspects of the physical dimension and its conjugate space-time dimension. A simple model for precognitive awareness is discussed and we then touch the dilemma posed by the confrontation of "free will" with precognition. We then shift back to a discussion of consciousness in terms of a "gas-phase" model of consciousness in the human ensemble. Finally, a model of transpersonal communication and the developing sensory system at the negative space-time level of Being is discussed.

B. An Evolutionary Pattern for Man

Think of Nature (the Unity) as a huge (seemingly infinite) interpenetrating and interacting ensemble of different manifestations of substance at

all dimensions of the universe⁽¹⁾. Each individuation in each dimension is radiating and absorbing energy in a variety of forms - sonic, electromagnetic, gravitational, X, Y, Z, ... etc. (X, Y and Z are presently unknown forms of energy in either the physical dimension or non-physical dimensions), and a variety of frequency ranges[†]. Thus, these different spaces are filled with currents of different kinds of energy that flow back and forth between the different manifestations of substance. These different currents embody information concerning the environment. The ability of man to sense and discriminate this information allows him to recognize, on some level of perception, his larger self (which I shall call his SELF). It is this recognition that allows him to grow and evolve.

We may consider the triangle of SELF illustrated in Fig. 1 as a symbolic representation of the general process path of man's evolution. This representation may apply to either a single entity or to a collectivization of entities to form a larger entity (city, nation, etc.). The process of evolution involves the chain of sequences 1231231... etc., and can be illustrated best by considering both Figs. 1 and 2.

Let us presume that an entity (a man), at time t_1 , begins to recognize the vague outlines of a new principle of nature or manifestation thereof (physical, emotional, mental, spiritual) because his sensory apparatus was capable of that level of perception; i.e., it had been adequately built to suit that task. With continued attention (and the passage of time), the degree (reliability) of recognition of this principle increases in magnitude and, at some later point in time, t_2 , our entity begins a program of self-control

[†]See Appendix A for a simple discussion of radiation from substance.

and self-utilization to use this principle in his life. With further passage of time (as viewed from the physical dimension), his self-discipline and application bring this principle under greater control and greater utilization in his life and, at some point in time, t_3 , his organism begins to adapt its structure (in the corresponding dimensions) because of the act of continually utilizing this principle in SELF.

The adaptation of his structure alters his sensory apparatus (physical, emotional, mental, spiritual) so that he now senses a broader spectrum of radiation from the ensemble of nature. This, in turn, leads to the recognition of some new principle at time t_2 and the process repeats itself in the clockwise progression of Fig. 1. In this way, the entity keeps evolving and becoming aware (ability to sense, identify and discriminate) of an increasingly larger domain of Nature. Thus, if we think of a time axis normal to the page of Fig. 1, the path of man's evolution is a spiral. As stated earlier, this model applies equally well to an organism (organization) which circumscribes a collective unit of man.

We must now ask, "Is this evolutionary organization of man a continuous and never ending process?" I doubt if we have the perception to fully answer this question at present. However, we can comment on whether or not, during a time period small compared to geological time, our degree of SELF recognition can decrease. Realistically, we cannot think of the plateaus in Fig. 2 as being unassailable - forgetfulness is ever with us. In our model, we should think of each plateau (principle or manifestation thereof) as a single state of consciousness, much like an energy level in the spectrum of allowed energy levels available to an atom (see Appendix A). It is quite likely that these consciousness states are grouped into bands of levels.

An individual consciousness level becomes populated as we adapt to it and is completely populated when we have completely adapted to it; i.e., one mode of our conscious behavior is completely localized on that state of consciousness. With the passage of time, if we do not continue to exercise the use of the principle in our lives, the state begins to depopulate (in terms of basic consciousness units) and, if the process continues for a sufficiently long time, we lose the ability to recognize this particular principle in Nature (i.e., in SELF). Of course, libraries help to maintain this SELF recognition in a variety of written forms.

Let us call the basic consciousness units "perceptrons" and think of the population of the individual consciousness states with these particles or wave packets. As is well known, waves may be combined by Fourier superposition to form patterns. For example, one can take the geometrical shape of a chair and decompose it into a set of waves which, when superposed would reconstruct the pattern of the chair. By adding a suitable time factor to each wave component, one could describe the chair as it flies in an arc through the air; i.e., at each instant of time, wave superposition reconstructs the pattern of the chair at a particular point along its flight path. We shall postulate that this same principle of Fourier decomposition and superposition can be used to treat any information pattern and, in particular, to treat patterns of consciousness where the fundamental wave components form "perceptrons." Using only a few waves, the allowable patterns are very simple and without any richness of detail. Using many waves, fullness, nuances and variances of a basic pattern can be well developed. Thus, as the state (or band) becomes populated by perceptrons, the human behavior patterns manifested as an expression of that consciousness become more well developed; i.e., a 1:1 correlation exists between patterns of consciousness and patterns of behavior.

Returning to our basic model, we may discern periods of awakening and periods of forgetting in the overall evolution of man. Thus, if we think of the size of the triangle in Fig. 1 as an index of the degree of SELF recognition, the picture of a simple spiral in time becomes a picture of an opening, expanding spiral during periods of awakening and a closing, shrinking spiral during periods of forgetfulness (see Fig. 3).

It is probably for such a reason as this that civilizations have risen and fallen, again and again throughout history. Those who gained the SELF recognition to build the society did not adequately appreciate which were the essential levels of consciousness involved. Thus, they did not set up a suitable system of learning for their progeny wherein they, too, could effectively populate those critical levels of consciousness needed to sustain and further build the physical manifestation of this consciousness, i.e., the society or civilization. Forgetfulness grew and the spiral began to contract. After a few generations, only the deteriorating physical manifestation of the earlier consciousness remained.

C. Information Theory and Reality

In the science of thermodynamics, one talks about two important quantities, energy and entropy. Most people are familiar with the concept of energy but not the concept of entropy. This latter quantity is used to measure the amount of disorder in a system (the amount of lost potential in the system). For example, if I take a jar of black marbles and a jar of white marbles and I mix them together, I have increased the entropy and lowered the potential of the physical universe (since I must do work to separate these marbles again). Scientific efforts show that, in any nonequilibrium process, whether it be the human consumption and digestion of food, a humming auto engine or the cooling of a hot cup of coffee, the rate of entropy production is positive so that the entropy

content of the physical universe continually increases and its potential continually decreases with increase of time. Until quite recently, it was thought that all aspects of entropy were positive and this meant that chaos must continually grow with the passage of time so that civilizations must inevitably degrade and decay. However, over the past forty years, we have begun to recognize that the information gained in a particular event or process is negative entropy (negentropy) and that, although in the course of evolution, the potential of the physical universe continually decreases, the information content continually increases.

The information content we speak of here can be in two forms: it can be in the form of physical order or organization of a structure or entity, or it can be in the form of knowledge (a different kind of organization). Thus, as an organism grows, it ingests chemicals in a disordered array and transforms them into an ordered arrangement in its own structure or body. Higher organisms do the same sort of thing with mental concepts or ideas to produce a conscious organization of knowledge.

Living organisms are equipped to use information available in their environment in the form of solar photons, chemical compounds in their food, etc., in order to replenish their information content against the continuous loss via various irreversible processes encountered in life and in order to reproduce themselves as new organisms. The process of evolution through which our biosphere has reached its present state can be described as a gradual accumulation of information. At the physical level, the biosphere information input consists mainly of solar photons and is channeled through plants into the biosphere system.

Following Theodoridis and Stark⁽²⁾, Fig. 4 illustrates schematically the physical biosphere information content, I_p , the information input, i_p , and the loss of information through irreversibilities (in the physical dimension), i_p' .

The rate of information accumulation through gradual evolution is $d I_p / dt$ and, for a biosphere that is evolving slowly compared to the rate at which it processes information (the general case), we have

$$\frac{d I_p}{dt} = i_p - i_p' \ll i_p . \quad (1)$$

By interpreting our historical observations of terrestrial life, we deduce that the arrow of evolution points towards an increase in biosphere information content, I . This is consistent with the existence of such evolutionary forces as natural selection through the survival of the fittest. If we extend this concept to the nonphysical levels of evolution, we would expect that "solar" photons in these dimensions would lead to evolutionary organization of our structure at these levels as well. During periods of flaring of such "solar" radiation, we might expect to feel new sensations and to manifest expressions of stress due to the enhanced information processing at these deeper levels of our organism. We shall return to this idea later. Let us now see what information theory tells us.

Information theory is the theory of generating, encoding, transmitting and receiving information. The basic new idea of information theory is that information is an entity by itself which can be subdivided into basic units called bits. When we speak about information and deal with information, we must do so without any consideration for its actual meaning. A bit is a bit! Brillouin^(3,4) showed that information was characterized as negentropy and that the entropies of thermodynamics^{and information theory} may be considered as one and the same.

Van Heerden^(5,6) shows us that rationality per se, in rational expectations of the future, in rationally pursuing one's goals and in rational knowledge of the past, does not deal directly with reality but only with information about

reality regardless of its "real meaning". Our eyes and ears do not allow us to step outside of ourselves. They are information channels; they pipe in information and make it available in a form wholly different from the real world (i.e., as a sequence of voltage pulses moving along neural pathways). Rationality orders this information and acts upon it and that is the best it can do. Experiments on subjects wearing "upside-down glasses" showed that they viewed their surrounds as being upside-down for about two weeks and at some point shortly after that, the brain suddenly adjusted the "picture" so that the subject, with glasses on, thereafter saw things right-side up. This type of experiment says a great deal about the relationship between reality and our perception of it; i.e., if it created the transformation in this case, how often does it do so to fit a preconceived idea or habit pattern; does it do this always?

In the past, physics, chemistry and astronomy have told us that there is a real physical space in which real things moved in time according to immutable causal laws. On the other hand, centuries ago, Immanuel Kant suggested that space and time are but the human way of perceiving reality rather than reality itself. From the viewpoint of information theory, our sensory mechanisms (both human and machine) are independent information channels which merely inform us about reality by confirming each other. Every monitoring device of science can be reduced to a series of Geiger counter clicks which yield a pattern of information about the reality under observation. It seems that reality, the thing itself we cannot know. The true nature of man and the true nature of the real world, of which he is a modest part, will never be fully known to us. However, we may, with our intelligence, discover many consistent patterns of information about these realities. The essence of intelligence is judgment; judgment is really recognizing; and recognizing requires rapid and continuously active

search through a very large storage of possibly relevant information.

Before closing this section, it is important to note that Reiss⁽⁷⁾ has bridged the interface between information theory and thermodynamics and has shown that direct analogues between the two can be formulated. In particular, a chemical potential for the quantity "information" can be derived. This means that the diffusion of information patterns in space and time through the transporting medium may be computable.

D. Different Dimensions of Different Information Sensing Networks and Energy Interactions

We must expect that particles (wave packets) and radiations manifesting in uniquely different dimensions of the universe can be directly cognited only by uniquely different types of sensory apparatus (see Appendix A). This should hold both for human biosensing systems and for mechanical instrumentation that man may develop. Of course, we can expect indirect cognition to occur via energy transduction effects between energy currents in different dimensions under certain special conditions⁽¹⁾.

For simplicity of discussion, we shall restrict ourselves to considerations involving only the positive space-time frame (physical dimension) and the negative space-time frame (conjugate physical dimensions)⁽⁸⁾. Some of the interactions between particles in these two dimensions (although not described this way) have been considered by Terletskii⁽⁹⁾ and his work is deserving of very careful attention. We must divide our observations of these two aspects of reality into the categories objective and subjective. The former relates to observations made by scientific instrumentation which generally deals with only a single sensing channel. The latter deals with observations made by the human sensory system which always deals with multiple sensing channels (in several dimensions). Let

us first touch on the human sensory instrument.

With the human observer, it is important to recognize that radiation from all levels of reality are stimulating his appropriate receptors and sending corresponding current pulses along network pathways to the cognition center, the mind-brain unit.

In terms of our model of seven dimensions, each represents a level of reality and we receive information about each through a unique bundle of information channels which we can think of as constituting a microscope tube; i.e., we have seven microscopes in our organism which are directed at the seven dimensions of Nature, one for each dimension. Conscious awareness of a level of reality depends upon which channel has our attention, upon which channel we are mainly monitoring, upon which microscope we are "looking" through. In recorded history, man has largely "tuned in" to the positive space-time frame channel of reality and has thus gained a reliable correspondence of observations and a security of function. This concentration of conscious attention on the physical dimension channel has built a cognitive attachment that is difficult to release (his eye is stuck to the microscope eye-piece). Temporary detachment from this channel, via meditation or other techniques, is not a simple process and is not easily attained. Attachment to another channel requires careful tuning (about which we know very little at the present time).

In the initial detachment stage, one enjoys the feeling of floating, of being aware yet not aware, feelings of euphoria and well-being, etc. These altered states of consciousness⁽¹⁰⁾ often provide one with a feeling of coherence of Being, a coming togetherness within self, a sensing of the total interactive nature of SELF, etc. In this detached state, we are probably monitoring, in a fragmented way, several information channels and generally with a low signal/noise ratio because we have not yet learned to clearly

discriminate one from the other. This seems to be an important future step for man and one that must be done well if he is to function effectively in the multidimensional spaces of the universe.

At this point, it is probably best to switch to a few observations and speculations that deal with the physics of the negative space-time frame relative to the positive frame. Let us first consider the time aspect using a model suggested by Targ⁽¹¹⁾ to explain the precognition results of the Targ and Hurt experiment⁽¹²⁾. When one solves the conventional wave equation, he obtains two different kinds of solutions. One solution, called the retarded potential solution, represents waves flowing in the direction of positive time. The other solution, called the advanced potential solution, represents waves running in the negative time direction. Our past practice has been to throw away the advanced potential solution as being physically unreasonable and use only the retarded potential solution. However, let us here consider the situation where both solutions are reasonable but that one propagates in the positive space-time frame and the other propagates in the negative space-time frame. To illustrate this, consider Fig. 5, wherein the right half represents positive space-time and the left half represents negative space-time. Think of this as a pond and a pebble is dropped at the origin (0) at time $t = 0$. Waves associated with this action propagate outwards in both frames at certain characteristic velocities. If, using his negative space-time sensory system (he has his "eye" at the negative space-time microscope), a person observes the character of the wave at $-t_g$, say, and is able to transfer this information to the conscious brain then, as he switches his attention to the positive space-time channel (shifts his "eye" to the positive space-time microscope), he has precognitive awareness of the wave characteristics $2t_g$ later in time at $+t_g$.

Expanding on this idea, we can think of events in time as arising out of the conjunction of several different entities. Each of these entities can be thought of as the superposition of waves so that the event may be considered as a grand superposition of waves wherein each individual component behaves as indicated in Fig. 5. Thus, by monitoring the radiation propagating in the negative space-time frame, in addition to the positive space-time frame, one can have precognitive awareness of future events that will occur in the positive space-time frame⁽¹²⁾. Think of these waves as collapsing in upon the now from $-\infty$ in the negative space-time frame and expanding outwards towards $+\infty$ in the positive space-time frame. Of course, extending this basic idea to the monitoring of a "mind" channel, one should have precognitive awareness of events occurring much further in the future.

It is much more difficult to give an example that illustrates a relation between negative space and positive space. This fact leads one to wonder whether or not our present concept and description of space is even physically, not to mention mathematically, adequate. Fragments of information from writers on this general topic area leave one with the impression that shape and form are somehow important characteristics of negative space. Rather than delve into these intricacies, let us consider the illustrative example of the sharpening of razor blades by placing dull blades at a particular location in a suitably oriented pyramid. As reported by Ostrander and Schroeder⁽¹³⁾, one of the secrets of the pyramid is its shape. Placing a dull razor blade (plain Gillette blue blade rather than stainless steel blade) on the pyramid axis one-third of the way up the axis, the pyramid being in the exact proportions of the great pyramid of Egypt (Cheops) and being oriented with one of its sides aligned along the N-S (magnetic) axis of the earth, and keeping it there for about six days, sharpens the blade. After this, it can be used in a sharpened condition every day if always kept in the

pyramid between using. From this, we can conclude that there is a relationship between the shape of the space inside this pyramid and the physical and chemical processes going on inside that space.

From the laws of the positive space-time frame, forces exist and act upon the razor blade to cause it to become blunt. It is only the very low mobility of atoms on the blade surface that keep it in the metastable state of sharpness at room temperature (heating the blade in an inert environment would cause it to become dull). Inside this properly oriented pyramid, the forces causing atom movement have been reversed and the driving force is towards making a sharper edge rather than a duller one. This is consistent with expectations concerning characteristics of the negative space-time frame⁽⁸⁾.

E. Precognition, Free Will and Disease

The question one is always asked is, "If one has free will, doesn't this negate the idea of precognition which seems to indicate a predestination?" Although this author thinks that most of the free will choice is made before entering the process of incarnation, free will can still be exercised in daily life without violation of the fact of precognitive awareness. To explain this, let me first present a holographic model for the creation of the universe. For those unfamiliar with the word, a hologram is basically a pattern of coherent energy that has a three-dimensional character in a space-time frame and it represents particular information.

In my model, God created the universe and He created it as a Divine Hologram! This was a field of force that organized Spirit substance into the projected pattern. Since Spirit substance consists of coherent radiation sources, it then radiated a hologram at the Spirit level which was a force field for organizing substance at the spiritual mind level (M_3 in Fig. 6 of Appendix A). This

substance then formed into the projected pattern from the higher level and, since it also contained coherent radiation sources, it radiated a hologram which acted as a field of force for organizing substance at the intellectual mind level (M_2). That, in turn, led to organization at the instinctive mind level (M_1), and so on down the line via a series of holograms forming and operating at the different levels of substance. I suspect that we see the first and simplest representation of this with the Soviet cut-leaf experiment^(13,14). Here, we perhaps see some evidence of the hologram penetrating to the physical level from the etheric level.

Now, there are several things that are important to note about a hologram. One is that if you take any piece of the hologram, you may recreate the entire hologram, and it is through this that we can understand what was meant when Cayce said: "Man within man is all representation of the universe. Within a cell of man is a representation of the entire universe--within an atom is a representation." If, in fact, the hologram model of the universe is correct, then this is exactly what we should expect. A second thing that is important to note about this hologram, if this is the way creation took place, is that the initially produced Divine pattern created patterns at the Mind level of Nature for the development of man in a harmonious way. This results from the coherence in the energy pattern. However, man has free will and, if with that free will he polarizes from an ego-mind aspect, he creates mental patterns which are not consistent with those initially set and they do not reinforce them (Fourier superposition). This, then, produces an anomaly or disharmony in the initial pattern and that disharmony in the initial mind pattern affects both the individual and mankind in general so that disease really would start here. That is, the thoughts that one creates within himself and within society at large generate patterns at

the mind level of Nature. Those patterns are superimposed upon the existing Divine pattern. They then produce cause and effect relationships all the way down through the various levels of substance, and so we see that our illness, in fact, eventually becomes manifest from the altered mind patterns through the ratchet effect--first, to effects at the etheric level and then, ultimately, at the physical level. Here, then, we see it openly as disease at the physical level and, if we begin to sense the etheric level, we will see it also as disease at that level. So what is the way to cure it? Even though we bring about medical changes at the physical level, we do little at these deeper levels so that the disease will eventually recur. We would be a better doctor if we could produce correction at the etheric level because then the cure would last longer. However, it will not be permanent because we have not altered the basic hologram at the mind and spiritual levels: We must change at the Mind and Spirit levels to change the mental patterns so that we can produce, if you like, an annihilation of disharmonious elements at this level of the hologram (by Fourier superposition of basic wave components). Then, Nature will just go forward in its harmonious way and man will not create and manifest disease!

Turning, now, to precognition and free will, we note that as one focuses his attention on the negative space-time frame microscope, he sees patterns of events flowing towards future conjunction in the positive space-time frame in a seemingly inevitable procession. However, one is free to influence these events by the use of his mind and to thus exercise free will. By projecting a suitable thought pattern with his mind, one can create a force that, via the ratchet effect, generates a set of waves that enter the negative space-time frame and are capable of annihilating or dispersing the basic wave components comprising the so-called inevitable pattern. Whether or not we are effective in altering the pattern seen by initially looking through that microscope depends on the energy intensity we can generate and project at the Mind level.

Once again, we may note that our real existence seems to be at the Mind and Spirit levels and it is our awareness mechanism that presents to us the "positive show" on the negative (-ve) space-time channel and on the positive (+ve) space-time channel. Our actions at the Mind and Spirit levels create energies that alter the "picture show".

Let us now leave this topic and return to a discussion of consciousness that may help us to understand the subject a little more fully.

F. A Gas-Phase Model of Consciousness in the Human Ensemble

(a) The Molecular Ensemble

We shall first focus our attention on a particular aspect of the physical world that is well understood by present day science and use it as an analogy for the understanding of man. First, we begin by considering a box at a fixed temperature T_1 which contains a large number, N , of gas atoms. These atoms can be thought of as being like marbles (of extremely small size) that are constantly moving about in straight lines until they interact with and bounce off another atom or the walls of the box (see Fig. 6). Thus, these atoms are in ceaseless motion continually exchanging energy with each other. One might think that after some time these atoms would all have the same energy, but not so--the energy distribution among these atoms, after a long time, is as illustrated qualitatively in Fig. 7; i.e., the number of atoms n having a particular energy E (with E increasing to the right) varies strongly with the energy. We see that the atoms in the box exhibit a wide range of energies, a few atoms having very small energy and a few having very high energy, with most having an energy slightly smaller than the mean energy kT_1 (k is a constant called Boltzmann's constant).

If, for example, we open a small window in the box and inject a quantity of heat, ΔQ , into the box via a beam of light, the temperature of the box will be increased from T_1 to T_2 ($T_2 > T_1$). The new equilibrium energy distribution for the molecules in the box is caused to shift up the energy scale compared to the old one (since $kT_2 > kT_1$); however, it exhibits the same general shape and we still have N molecules in the box. This is illustrated in Fig. 8 where we note that the mean energy, kT , has moved up scale. In a real situation, the box cannot be completely isolated from its surroundings relative to heat losses so that we can expect a general heat loss rate of $\dot{q}$ from the box to the surroundings. Thus, if we do not inject heat into the box at the same rate $\dot{q}$, we will be unable to maintain a constant temperature in the box. To increase the temperature we must add an additional quantity of heat.

If we were able to take the equilibrium distribution of atoms at temperature T_1 and extract all of the atoms having energies between E_1 and E_2 (call this number ΔN), as illustrated in Fig. 9, we would find that this gap in the distribution would not exist for long, but that the atomic collisions would allow the distribution to relax, to give the dashed curve which is an exact replica of Fig. 6, but with fewer atoms ($N - \Delta N$ atoms). Thus, no matter what arbitrary changes we make in the distribution of atoms, when the system is allowed to relax, it quickly recovers its equilibrium distribution of energies.

This does not mean that things are static--far from it. Any particular atom exchanges energy in each collision it makes with the other atoms and moves up or down the scale of energy so that, over a long period of time, any such atom experiences every energy state in the system. In this example, we have conservation of energy holding in each collision; i.e., if one atom gains energy by the interaction, the other loses energy. From this example, it should be clear that it is not particularly meaningful to talk about the characteristics

of a single atom (because they change energy so quickly with time); it is only meaningful to talk about the characteristics of the total ensemble, i.e., all the atoms in the box, because their energies are interdependent.

If the atoms in our box are the type that really form molecules (two or more atoms bound together) then, at low temperatures, we will find most of the species bouncing around in the box to be in the molecular or associated state. In this state, the electromagnetic nature of the individual atoms, producing an attractive force between them, is sufficient to overcome the collision force of other molecules so that they remain strongly bound together. On the other hand, the thermal energy (due to the heat content which increases with increase of temperature) constitutes a force tending to cause the molecules to dissociate into their constituent atoms. This thermal energy force is manifested as a collision velocity; i.e., at low temperatures the thermal energy of an atom is low and so, also, is its translational velocity. Thus, if we think of the marbles in the box as having a coat of glue, they will stick to each other if they collide at a small velocity (low temperature), but will bounce off each other if they collide at a high velocity (high temperature). Further, a combined molecule colliding with a wandering high velocity atom or molecule will generally be split up into its atomic constituents. At any particular temperature of the box, those molecules having kinetic energy greater than E_B (the value of the electromagnetic binding energy for molecules) will be dissociated. As the temperature is raised, the fraction of molecules having energy greater than E_B is increased (see Fig. 6).

(b) The Human Ensemble

Let us now turn to consider man and consider how the foregoing works as an analogue.

In this case, the important measure for characterising man is not energy but consciousness, an extremely difficult measure to explicitly define. We may prefer to subdivide this all-embracing quality into the dimensions of physical, mental and spiritual (or physical, intellectual and psychological, if preferred); however, for our present purposes we want to present a simple plot and thus will lump all aspects of consciousness (denoted by the symbol C) together on one scale. In this case we should obtain a similar distribution to Fig. 7 if we take a society of N people (N is large) and we plot the number of people, n, having a certain level of consciousness, C; i.e., at time t_1 we have few individuals with a very low degree of consciousness and few with a very high degree of consciousness--most have a consciousness near the mean consciousness C^* (see Fig. 10). However, several important differences between the molecular and the human ensembles must be noted. First, a human entity has free will and can move either up or down the scale of consciousness as he chooses (of course, because we humans tend to polarize our attitudes around some focal point, it will take many lifetimes to span the entire distribution--which is probably a supportive factor in the need for Reincarnation if one accepts the postulate that all states of consciousness must be sampled by each member of the ensemble). Next, whereas for gas atoms, energy had to be conserved during an interaction so that if one atom gained energy the other lost energy, for humans, consciousness is not conserved. When one human entity meaningfully interacts and communicates with another, new information is exchanged and consciousness is created.

Perhaps it is best to think of this in terms of a receptivity influence. As one meaningfully interacts with another, one's receptivity opens and radiation pours in from some other dimension of the cosmos. This seems quite analogous to adding a quantity of heat, ΔQ , to the box of molecules. Thus, as time passes, with meaningful interactions, the total amount of consciousness shared in the

system (the human ensemble) grows so that, at time t_2 greater than t_1 ($t_2 > t_1$), the average consciousness of the collective ensemble is greater than it was at time t_1 . Of course, the system of human entities is not fully insulated from its cosmic environment and we may anticipate that it tends to extract consciousness from the system. Various mental practices on the part of the entities, their lack of proper application, etc., can lead to a type of forgetfulness and loss of consciousness occurs. Thus, we can expect that some positive rate of creation of consciousness is needed to maintain the ensemble at a constant C^* level.

The correspondence between Figs. 8 and 11 is made more complete by recalling that, when we took our box of gas atoms at temperature T_1 and injected energy into the box, the atoms absorbed the energy and attained a heat content characteristic of temperature T_2 and thus, an energy distribution characteristic of T_2 . Thus, T grows from T_1 to T_2 as the new energy content is absorbed by the atoms. Likewise, in Fig. 11, time grows from t_1 to t_2 as this newly created consciousness content is absorbed by the people (see Appendix B for an even deeper correspondence).

Once again, each part of the distribution is dependent on all the other parts. This is because we sense only by contrast (i.e., by difference with the surroundings in space or time), and if entities are removed from one segment of states between C_1 and C_2 (see Fig. 10), other entities would automatically develop those levels of consciousness because there is no awareness (or sensing ability) to keep them from occupying those states. So it is with the whole distribution, one entity needs to meaningfully interact with and observe as much of the distribution as possible to enhance its consciousness. Again, one part of the system is dependent upon the others and collectively we form a species. The important thing to remember is that all members of the ensemble are part of

the one--the whole system is ourselves. In part, I am you and you are me. That which I do reflects your growth and that which you do reflects mine. When we see something in our own individual entity (our personal selves) that we do not esteem, we cannot disown it--we must work on it until we have mastered it. Likewise, if we see something in another human entity that we do not esteem, we cannot disown it, we must find a suitable way to work on it until we have mastered it--for we are perfecting ourselves. And this we do by increasing the average consciousness C^* of our ensemble.

This connectedness between living entities has been demonstrated in (a) the Soviet rabbit experiment⁽¹³⁾, and (b) the Baxter experiments⁽¹⁵⁾. In the Soviet rabbit experiment, the mother rabbit was kept on land and hooked up to an electroencephalograph machine to monitor her brain waves. Her brood of baby rabbits was taken deep beneath the ocean in a submarine and killed one at a time. As each child was killed, a characteristic electrical signal appeared in the brainwave pattern of the mother rabbit. Here we see a universal connectedness within this family of rabbits. In the Baxter experiments, a plant was used as the monitoring system and a record of its biorhythm noted as a function of time (reading voltage or resistance). When brine shrimp were dropped into a nearby pan of boiling water, a characteristic anxiety signal appeared on the chart; when the grass outdoors was cut, a similar signal appeared; when any living substance had its life terminated (body cells or a three-minute egg), this signal response appeared. Again, we see a connectedness between these living things at some dimension of the universe.

Returning to Fig. 11, at the very high end of the consciousness scale ($C > C_c$) there are a few entities, like Jesus who became the Christ (C_c), whose enlightenment enriches all the rest of us and who communicates so meaningfully

that we are shown a more effective way to grow in consciousness.[†] As time passes, the average consciousness, C^* , increases, so that the number of entities endowed with the level of consciousness $C > C_c$ increases. If we knew the exact shape of the distribution curve in Fig. 10 and knew the ratio of C_c to C^* , we could calculate the probability of such an entity being born at any time or the length of time man would have to wait for such a birth event to occur by chance. One point is clear from this model, the rate of growth of consciousness depends upon how meaningfully each of us communicates in each life interaction with another entity. If, through fear or insecurity, we each shield (or screen) ourselves with an idealized image, then image communicates with image, receptivity is absent, and very little consciousness is created in the interaction events and collective man's consciousness does not increase and indeed, may decrease with time. We must learn to communicate fully and honestly.

To illustrate the relativity of our judgment scale of good and bad (or good and evil), consider Fig. 11. At time t_1 , the average (at level C_1^*) look up the consciousness scale ($C < C_1^*$) and exclaim that in that direction lies "good" states of consciousness; they then look down the consciousness scale ($C < C_1^*$) and exclaim that in that direction lies "bad" states of consciousness. At a later time t_2 , the average (at level C_2^*) again look up and down the scale and make similar pronouncements. However, there now are a set of states between C_1^* and C_2^* that were pronounced "good" at time t_1 but are pronounced "bad" at time t_2 . Thus, we see the relativity of our judgment scale.

From the model presented in this article, we see that there is a natural inequality between men taken as individuals. However, our states of

[†] It would seem that the higher is an entity on the consciousness scale, the greater is the receptivity and ability to function as a channel for the ingress of energy into the human ensemble. Further, it seems to be a strongly non-linear capacity.

consciousness are all interdependent and it is much more meaningful to consider the average of the total ensemble when one wants to assess the growth (meaningful communication) or the decay (forgetfulness) of man.

Recalling the association-dissociation reaction in the molecular ensemble, let us now consider the analogy in the human ensemble. Here, the counterpart to molecule formation would be the man-woman marital pair, the family unit and other major cooperative human institutions. Treating the man-woman molecule as a simplest example, the attractive force binding them together is "love." It is the love force, in all its various manifestations, that creates this important bond. The stronger is the love force between the pair, the greater will be their binding consciousness and the more will they be able to resist the dissociation forces of their environment. In the molecule ensemble case, it was the kinetic energy of the impinging molecules, characteristic of a high temperature, that created dissociation. In the human ensemble, it is the degree and frequency of impact between the pair and their surroundings (other people, situations, stresses, etc.) that determines the probability of dissociation. If life becomes so hectic and stressful that little conscious attention is applied to vitalizing the binding love potential, then, after a period of time, even a trivial impact can precipitate a chain of sequences that ends in dissociation.

In general we find that, as society becomes more sophisticated and more complex, the intellectual component of C^* grows and so also does the frequency of impingement events because of our increasingly busy lives and our intellectual involvement with the events of our life. To maintain a bound state at these large values of social impingement, the stronger must be the force of love between the entities. Let us look at this in a little more detail.

In the molecular ensemble, the interaction potential ϕ , and interaction force F , vary with distance as illustrated in Fig. 12. When the atoms are far

apart, ϕ is constant and a small attractive force exists. As they come closer together, the attractive force increases and the interaction potential decreases until, at the distance R^* , the force has decreased to zero and the interaction potential ϕ is at a minimum; i.e., maximum energy, E_B , is being stored in the form of potential. At smaller separation distances, $R < R^*$, the force becomes repulsive and the interaction energy begins to increase. If an impinging atom or molecule transfers a greater energy than E_B , the hit molecules will dissociate and the atoms will move away from each other. If one impingement exchanges energy $\Delta E < E_B$, the hit molecule will move to a separation distance $R^* < R < R^{**}$ and if it is unable to exchange this excess energy with its environment before being hit by another molecule or atom, it is very possible that it will acquire an excess energy greater than E_B and dissociate; i.e., multiple impingement events cooperate in producing dissociation.

This same type of altered state can occur in the human ensemble. The greater is the love binding consciousness, the deeper will be the potential well for the human pair and the greater will be the energy stored in the love bond. Of course, we cannot describe the situation using a distance parameter as in Fig. 12, but will return to a preferable description in the next section. A number of impacts may occur between the pair and their environment and, if insufficient time has occurred for the pair to relax to the condition of maximum binding potential, then their instantaneous binding potential may become very small and, in that condition, even a small impact can lead to dissociation. This is why it is always important for the pair to try to clear away the psychological impacts of their hectic life and return themselves to the condition of maximum binding potential--this takes attention, time, and effort. It must also be recognized that the binding love consciousness may also change with time (increase or decrease) as the entities experience each other more fully.

Further, an impacting event must be thought of in psychological terms rather than in mechanical terms; i.e., it is an event that perturbs the consciousness (in one or more of its many dimensions). See Appendix B for further implications of the model.

G. Transpersonal Communication

To begin to understand the analogue to Fig. 12 for the human ensemble, let us briefly discuss two types of atomic interaction forces, the van der Waal's dispersion forces and the dipole-dipole interaction force. In Fig. 13(a) we deal with two symmetrical atoms separated by a distance R . In both atoms, although on a time-average basis, there is no charge asymmetry; instantaneously the electrons are moving in their orbits and constitute a net instantaneous electric dipole moment which moves rapidly over the atoms with time and averages out to zero over sufficient time. However, this means that, instantaneously, the atom must be emitting electromagnetic (E.M.) waves because moving charge requires E.M. wave emission. Thus, think of atom A as a broadcasting station operating on a band of frequencies determined by the orbital electron characteristics of A. After a short time this wave reaches atom B, having decayed slightly in intensity because of the distance between B and A, and acts as a driving field on atom B which was initially performing its own random oscillations (its own dance pattern). This driving E.M. field of A at B acts as a force tending to polarize B so that its orbital electrons begin to move more into synchronization with those of atom A. If atom B is very polarizable, a sympathetic resonance is set up between A and B so that atom B oscillates in phase with atom A (now they are both dancing the same pattern) and sends out its E.M. wave in phase with that from A. When this wave reaches atom A, it acts as a driving force for atom A and since it is in phase with A, it is

like an additional in-phase push on a swing, and the energy builds higher. The force of attraction between the two atoms is given by the product of the instantaneous electric dipole moment of A and the E.M. field from atom B at the location of atom A. If atom B is not very polarizable, it does not respond to the E.M. stimulation from atom A and its own broadcast E.M. field will generally be strongly out of phase with that from atom A so that the E.M. waves destructively interfere and the interaction energy is small; i.e., they are not responsive to each other. If atoms A and B are both very polarizable, they will be sensitively responsive to each other, a sympathetic resonance of electron motion in the two atoms will be set up, their broadcast E.M. fields will constructively interfere and they will strongly attract one another.

Turning to the dipole-dipole interaction of Fig. 13(b), the force of interaction is just due to the sum of the charge-charge interactions; i.e., opposite charges attract and similar charges repel. Thus, the net force of attraction (or repulsion) depends upon the relative orientation between the two dipoles and upon the distance of separation. We find that Fig. 13(b2) gives the maximum force of attraction, 13(b3) gives the maximum repulsion (same magnitude as 2) and 13(b4) gives zero interaction.

In most real cases of two molecules interacting together, we must consider both the dispersion force interactions and the dipole force interactions. If there is a large dipole moment on the molecules, there is unlikely to be a strong dispersive force interaction and the molecules will not be sensitively responsive to each other.

Now we are ready to apply this model to the interaction between two human entities. We shall postulate that the love force, although arising basically at the mental level of the entity, is channeled through one of the special body glands and broadcast by that gland as a unique radiation that is probably

not manifest in the positive space-time frame but in the negative space-time frame, or in some other frame. At the physical level, the appropriate gland is the thymus; at other than the physical level we are dealing with the heart Chakra^(16,17) (see Section H). This particular radiation is broadcast by the sender and is absorbed by the similar center in another entity's body. The absorption of this radiation stimulates their thymus gland and heart chakra and generates a biological activity in the body. If the receiver is polarizable (responsive) in the particular frequency range of the broadcast radiation, the biological activity will be high and the receiver will respond by broadcasting its own radiation via this endocrine/chakra pair, and the love consciousness can form a bond between them. If one transmits only small power and in a very narrow frequency band from this center, then only selective individuals will receive and sense this love. If one builds himself to transmit large signal power over a broad band of frequencies, many entities can absorb this radiation and be aware of this love. Since most of the audiences of the truly great teachers like Krishna, Buddha, or Jesus, who all manifested the Christ consciousness, did not understand them intellectually, the audience response to them must have been directly related to the broad band, high power signal of love that they radiated.

The more constantly polarized is an individual in his attitudes, the less awake or responsive is he to such broadcast radiations. He is too rigidly aligned in a certain attitude direction to sense the projection from a sender not similarly aligned. The response of two human entities via a fixed dipole-dipole type of interaction is in complete accord with Fig. 13(b) for molecules; i.e., maximum positive interaction if like polarization occurs, and negligible interaction for indifferently coupled polarizations.

The Soviets⁽¹⁸⁾ performed a sympathetic resonance experiment on two animal hearts that had been removed from their respective bodies and maintained separately in a functioning condition via fluid and electrical connections; i.e., each had its own separate support systems and they were not linked together in any way. The hearts were placed at the two foci of an elliptical mirror so that any physical radiation leaving one heart would be reflected from the mirror to focus on the other heart, and vice versa. Initially, the two hearts were beating with very different rhythms. However, after a few minutes the rhythms and phasing began to shift and, after about ten to fifteen minutes, the two hearts were beating in perfect synchronization, i.e., identical rhythm and identical phase. Of course, this same phenomenon occurs when a mother holds her child to her breast and they both quietly go off to sleep.

Other members of the endocrine/chakra system are channels for broadcasting other mind qualities which allow force interactions of different types to occur between human entities in the ensemble. The van der Waal's dispersion type force and the permanent dipole-dipole type force seem to be useful models for understanding interaction events between human entities in the human ensemble. At the moment we do not seem capable of unraveling the distance and time correlations of these forces.

H. The Developing Sensory System

The sensory system to which I am referring is located in the etheric body (the negative space-time frame body). Considering both the physical and the etheric together, one should think of these as having a type of transformer association with the etheric as the primary and with the physical as the secondary. The primary circuit always contains the greater quantity of energy and the secondary manifests a stepped-down condition so that there is less energy generally.

In the physical energy circuit, important energy stations are the seven major endocrine glands and these are linked together by certain of the circuit elements of the acupuncture meridian systems. The endocrine glands function as the important spiritual centers of the physical body in that they are producers of powerful hormones that, on the one side, are strongly influenced by our psychological nature and, on the other side, strongly influence the other chemical factories of the physical body. In the etheric energy circuit, important energy stations are the chakras and they are connected to the subtle nadi via some form of circuitry. The chakras also seem to serve as energy stations at the deeper dimensions of the body.

Since the chakras and the endocrines appear to be in the same physical location of the body (see Fig. 14), one may presume that they act as companion glands, i.e., as chakra-endocrine pairs and that they function as major energy transducers in the body. We may think of a particular pair as a tuned circuit via which one may tap energy from the cosmos⁽¹⁾ or via which one may communicate with another aspect of SELF. Figures 15 and 16 represent both a front view and a side view of the major chakra network in the body⁽¹⁶⁾ illustrating that, although the chakras have their functioning center slightly displaced from the endocrine location, their seats or root stems appear in locations closely related to those of the endocrines. In Fig. 17, we note the types of psychoenergetic phenomena associated with each center as specified by Powell⁽¹⁷⁾. These energy centers have been located and observed by clairvoyant and other psychoenergetic faculties and there does not exist a complete consensus of opinion relative to the function allocations of Fig. 18.

The next step in the progression of our understanding relates to the various psychic manifestations of psychokinesis, telepathy, and so on. For this, I anticipate that we must begin thinking of these chakra-endocrine pairs as coupled

units and operating very much in what I would call a laser mode; that is, one must start thinking of these various centers working in synchronization with each other to manifest coherent energy and then radiation from these centers. Thus, if we want to investigate these phenomena, we must monitor the body in such a way that we are reading energy changes from these centers.

The lasing aspect of these centers is very important to understand. If one takes a ten-watt bulb, we know there is only a small amount of illumination radiated from the bulb. It, indeed, sheds some light, but it is not a great amount of light, and that is because the conventional light that we use is incoherent, and its energy content is not very effective for illumination purposes. Incoherence means that the rays of light are all out of phase with each other, so they cancel, and we get what is called destructive interference of the light waves. Thus, although one gets some illumination, he does not get much. However, if one can arrange for those individual photons of light to all be in phase, then he obtains constructive interference of the light waves; i.e., the resultant wave becomes very large in amplitude. When that happens, you have a laser; you have coherent light and that same ten-watt bulb can now produce an energy intensity over an area of about one square inch that is far greater than that found at the surface of the sun. This is far more effective use of the energy! From that same total energy, the same basic stuff, by rearranging it in the right way to make it more coherent, one is able to develop a fantastic tool capable of doing many things. That's what I think happens here in the body!

I propose that the manifesting of psychoenergetic phenomena is associated with taking the primary energies in the body and making them coherent. In my modeling, I suspect that if we took all the energy in a single human body and made it coherent, there would be at least enough energy to create our entire planet at the physical level. You see, the basic energy is already there; it

is just that it is in an incoherent form, and our job is to make it coherent. This we do by developing attunement with Nature through our meditation, our thoughts, and our actions. That is when these powers become manifested, and they are manifested through these various mechanisms. Some people seem to have a head start via the structure of their genes, but others can catch up and surpass by muscle-building at these internal levels of self.

From theosophical and other literature^(16,17), it is indicated that when the chakras are all balanced and functioning well, then they create a spinning action at the inlet location. This, in turn, leads to an energy vortex at the mouth of each center. As the individual develops, the frequency of spin becomes faster and faster and a greater energy flux is processed by the individual. He begins to manifest greater and greater psychoenergetic capacities. At these higher energy fluxes, there is an even greater need for balance to occur between the different centers, otherwise, energy surges can occur which will damage the weaker links of the system and great imbalances in human behavior patterns may be expected to ensue.

At the other end of the spectrum, i.e., low spin frequency or low energy flux, where most of humanity is presently functioning, the different energy stations are not spinning at comparable rates and some of them may be spinning erratically (stop and start, etc.). As an analogy, we can visualize a wheel on a shaft which is mounted in bearings and the wheel is eccentrically loaded so that, at small rotational velocities, it produces a slight thumping and most of the energy is dissipated in the bearings, but no real structural problem occurs. However, as the wheel is driven faster and faster, the energy dissipation begins to be unmanageable, the vibrational modes become wildly erratic, and the shaft is torn out of its bearing mounts, i.e., chaos ensues.

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If one is in such an unbalanced energy function condition and one shocks open a particular energy center either by the agency of an accident, the taking of drugs, a severe emotional experience, etc., then, one may anticipate a type of personal havoc to follow. If one can develop slowly, by personal choice, then he can bring his centers into a smooth and balanced functioning, albeit he is still only processing a small energy flux and does not manifest much psychoenergetic capacity. However, he does manifest a balanced and reliable behavior pattern.

Let us suppose, however, that via some energy condition, at the mental or spiritual levels of the Cosmos, a pattern develops which forces the chakras of all members of the human ensemble to spin faster and faster. Now, we no longer have any choice about personal development, we are faced with a biological evolutionary imperative, we must change our internal energy balance in order to survive. If such a cosmic condition did develop, people would have their chakras spinning faster and faster, energy dissipation would increase, great energy potentials would be built up in the body which would be felt as enhanced tension and would eventually discharge through neural and other pathways of the body (like a voltage breakdown phenomenon). This would damage certain insulating and functioning layers of such neural systems leading perhaps to "cross-talk" between different circuits, the consequence of which is that the body would perform actions and functions out of registry with brain commands. We can also anticipate that individuals would begin to erratically manifest some psychoenergetic sensations and, being unaware of what is really happening, begin to fear for their sanity because of the seeming "unreality" of these sensations. Being fearful, they try to force their body system into either a condition of tense control or a drugged state. However, it is of no avail, because a tiger has been unleashed within them and they do not know how to handle it. Unless

they do learn, they slip inexorably towards the condition of schizophrenia. On the way, they do irrational things seeking in a random empirical manner to release this terrible internal pressure; they become irritable and begin to think themselves basically incompatible with their wives or husbands. This leads to separations and divorce and a continual round of life style changes to find release from this internal antagonist. Of course, the real problem is not basic incompatibility, it is energy imbalance at an energy flux level that the individual cannot handle. Because he is unaware of the real condition, he flounders badly but the information flux driving biological evolution in the cosmos increases steadily and he either finds the pathway to such evolutionary development or he finds madness at the end of a long road of futile experiments.

I wish to suggest that such a driving energy condition does presently exist in this portion of the Cosmos and has been growing for the past few years. I wish to further suggest that the psychic age of man is being pushed into existence by this growing energy pattern. Finally, I wish to suggest that we help each other to become aware of what is happening and to guide these other parts of our SELF to the understanding which they will need for undertaking their own personal balancing and transformation.

I. Concluding Remarks

A biological imperative for the organization of our psychic awareness mechanisms seems to be in operation in the human ensemble. Cognition of information patterns in the negative space-time frame as well as in the positive space-time frame will be natural capacities of homo sapiens in the future. We can anticipate both great benefits and great problems to arise out of the manifestation of these new capacities in man. We know that man has been deeply attached to the material world of the positive space-time frame and suspect that man may

become even more strongly attached to the psychic world of the negative space-time frame. Such an attachment could continue for tens of thousands of years if man thinks of that world as reality. It behooves us to be aware that we are entering the psychic forest and that we must walk through it in order to evolve. If we center our consciousness in our spiritual selves, we may diminish the attachment to the psychic domain and quickly reach the other ends of the forest where our real evolution can begin. There, we shall begin to learn about the eternal nature of ourselves and about the oneness of our SELF. Let us move forward together, being teachers and students to each other, for we are perfecting SELF.

Appendix A

Radiation and Substance

In order to provide a slight background perspective of radiators, absorbers, and radiation, the simplest place to begin is at the level of the atom. A simple model of the atom is that of a nucleus of positive charge surrounded by a number of electrons, each of them being in well-defined but different energy states. Other possible states for these electrons exist but, in the atom's equilibrium state, they are not filled by electrons. If we stimulate the atom, we can cause the electrons to shift to these unfilled or excited levels and, when they drop back into their equilibrium levels, they emit electromagnetic (E.M.) radiation which is often in the visible range of the E.M. spectrum. In Fig. A-1, some of these energy levels are schematically illustrated using the simple Bohr model for the hydrogen atom.

A useful model for simulating the behavior of the electron level changes is the "classical harmonic oscillator". We say that a charged particle of mass M is bound to a position of equilibrium with a spring by a force of interaction G (known as the force constant of the spring) as illustrated in Fig. A-2. When the particle is displaced from its equilibrium position and released, it is found to vibrate at its resonant frequency ν_o given by

$$\nu_o = \frac{1}{2\pi} \left(\frac{G}{M} \right)^{\frac{1}{2}} \quad (A-1)$$

and the amplitude decays with time because of the frictional damping in the spring; i.e., it acts something like the familiar tuning fork. For the charged

particle, the initial displacement may be caused by the exchange of energy with another atom or by the absorption of some electromagnetic energy.

This provides us with a very simple model of a light source. The vibrating charge will create an electromagnetic field oscillating in a narrow frequency range $\Delta\nu$ about the resonant frequency as illustrated in Fig. A-3. Here, $I(\nu)$ is the intensity of the radiation from the source at frequency ν . In general, a given type of atom will exhibit a spectrum of such frequencies, i.e., a series of such lines at different frequencies where each line is associated with an electron transition from one orbital energy level to another.

If we consider groups of identical atoms, the foregoing describes the situation so long as the atoms are far apart and isolated from each other. They give identical spectra with lines of the type illustrated in Fig. A-3. If we allow two of these atoms to come closer together so that they begin to exert a force on each other (an electrostatic force), they become coupled so that G in Fig. A-2 is no longer a constant; i.e., the motion of one exerts a force on the other. For these two atoms, their resonant frequency changes from one value, ν_0 , to two values, ν_1 and ν_2 , which depends upon the distance of separation of the atoms as illustrated in Fig. A-4. The values of ν_1 and ν_2 diverge from each other as the atoms become closer and closer together and interact with a tighter coupling. We complete the picture by considering many atoms interacting very strongly with each other. This provides a whole range of overlapping resonant frequencies which cause the simple resonant line of Fig. A-3 to broaden into the resonant band of Fig. A-5.

Before we press on, there are a variety of important characteristics that we should note concerning these electronic vibrational states of matter. First, every atom, molecule, cell, gland, animal, etc., has at least one resonant

energy band of some bandwidth $\Delta\nu$ at which it will both emit energy (E.M. radiation) in some spatial pattern and absorb it; i.e., they are both the same for a particular system. Thus, each system is in communication with the outside world (transmitting and receiving) via its resonant frequency spectrum. This particular spectrum is like a unique fingerprint via which we can identify the system.

If we look carefully at the human body with electromagnetic detectors, we are able to see E.M. energy radiated from the body not only as a result of electron orbit changes but also as a result of physical rotations and vibrations of the molecules, cells, etc. In time, we may even come to detect natural X-ray and γ -ray emission from certain regions of the body. In addition, if we carefully scan the body with sonic detectors, we shall detect a unique sound spectrum associated with actual physical movement of cells and body systems--another fingerprint. In time, we can expect to find many such fingerprints radiated from the physical body.

Perhaps one of the most striking techniques for revealing some of these energies is the use of liquid crystals. By painting a person's body with liquid crystals, color patterns can be readily seen. Here, the liquid crystal acts as a transducer to turn the body's radiations into an optical manifestation that can be readily seen.

These are the types of radiation we know at this point in time, and we are trying to use this as a guideline for understanding the uncommon energies we hear about. We hear of psychometry. We hear of dowsing. We hear of clairvoyance and clairaudience and prophecy and various kinds of channeling activities. We hear about radionics, vivaxis, and many other nonconventional methods of gaining information about our environment and about ourselves. You see, we communicate with each other only through radiation patterns and

although we think conventionally in terms of the visual (which is electromagnetic) and in terms of the sonic, we should anticipate that nature is filled with many, many other kinds of energies. As we attune to them and discriminate them, then we, in fact, are obtaining additional information about our environment.

Let us now extend these radiation ideas to substances from other dimensions of the universe than the physical. Starting with the yogi philosophy of the seven principles operating in man, I hypothesize that this means there are really seven different levels of substance in the universe and that these different substances have different types of configurations. They obey entirely different kinds of laws--unique types of laws--and they have unique characteristics of radiation (absorption and emission). I further postulate that they operate in different kinds of space-time frames in the universe and so are distinct from each other. The seven levels of substance, then, from the coarsest going towards the finest are: (1) the physical level that we are familiar with; (2) the etheric level (the Russians call this the bioplasmic body or the energy body; some people call it the prephysical body); (3) the astral level; (4) there are three levels of mind: instinctive, intellectual, and spiritual mind; and (5) another distinct level, which is spirit.

There is considered to be a level beyond these seven which shall be called the Divine. However, relative to all that I think we will be capable of perceiving for a very long period in the course of human evolution, we may think just in terms of the seven levels of substance.

These seven substances interpenetrate each other in nature and may interact with each other. They, through the polarity principle, form atoms and molecules and configurations of these. One can apply the metaphysical principle: "As

above, so below; as below, so above," and realize that what we see in the physical may be used as a model and this same kind of modelling understanding may be extrapolated through the other levels of substance, differing somewhat in detail from the physical, and we may begin conceptually to grapple with these other levels. The substances interpenetrate, and their relationship may be visualized by considering the situation in our own bodies. To visualize our seven bodies, think of seven transparent sheets of paper and, on these sheets, using particular pens of different colors, draw circuitry of one color on one, and on another draw circuitry of another color, and so on through the seven colors. Then, put these sheets all together and look through them, and you will see an organization of substance at the various levels within the bodies of man. That, basically, is the model I wish to project.

In general, these substances do not interact with each other too strongly. However, they can be brought into interaction with each other through the agency of mind, and it is really at the point of mind that one can bring about changes in the organization of structure in these various levels of substance. That is, through mind forces, one can create a pattern, and that pattern then acts as a force field which applies to the next level of substance. In turn, that force field is a force for organizing the atoms and molecules into configurations at that level of substance. That pattern of substance at the etheric level, then, is in a particular state of organization and it has its own radiation field--its own force field, if you like--and that force field, then, is a field for the organization of matter at the next level of substance --the physical level of substance. These etheric forces, then, bring about the coalescence and organization of matter at the physical level of substance.

Here, we see something that I have chosen to call the "ratchet" effect; one can see an action beginning at the mind level and working its way down

through to produce an effect on the physical level (and vice versa).

As an aid to visualizing this model, consider Fig. A-6. For these seven levels of substance it is meaningful to draw a plot of the intensity of the radiation versus its frequency. Now, the thing we have to realize is that this particular representation of Fig. A-6 is purely for coming into contact with the idea and is not a scientifically correct representation, since these levels of substance represent entirely different kinds of energy, entirely different kinds of physical laws, and they really should be represented on different axes, i.e., different coordinate vectors of phase space. That would be a more proper way to do it. And, in fact, along any one of these coordinates, there may be many different kinds of energy that should be represented (just like electromagnetic, sonic, gravity, etc., energies in the physical). But, at least for us to conceptually see the simplest outlines of the model, it is worthwhile to represent it this way: the physical, etheric, astral, mind levels and the spiritual level on one axis. Through focusing attention on the mind and spirit levels, here we see the true essence of man. This is the indestructible reality of man and is the on-going man. These levels of energy function (or appear to function) in a non-space, non-time frame of reference--that is, the patterns of intelligence (in that frame of reference) are not represented on coordinates which relate to space and time.

The astral function is largely as a containment vehicle, it appears, to keep this human essence in a compact form between incarnations. Looking further to the left, we come down to the temporal reality associated with this kind of physical existence; i.e., a vehicle that is suitable for experience in this earth plane (the etheric level and the physical level). In the case of the physical, we have the space-time frame which is the Einsteinian frame which we know a great

deal about. The etheric level is a companion level and it operates again in a space-time frame but in a different space-time frame from the physical, and yet these two are complementary. That is, as time goes on, for the physical the potential decreases and entropy increases, whereas for the etheric we have the reverse situation (the potential increases and entropy decreases). A characteristic of the physical frame is one of disorder. A characteristic of the etheric frame is one of the organization of matter. The physical is primarily characterized by electric effects. The etheric is primarily characterized by magnetic effects.

This is the way in which I have come to look at these various energies; i.e., that there are radiations associated with these different levels, and these radiations give rise to the phenomena that we can call psychoenergetics. The majority of these phenomena deal with the etheric vehicle. That is, we have a sensory system in this vehicle which connects us to the psychoenergetic phenomena just as our five physical senses connect us to physical phenomena.

Appendix B

The Gas Law for a Human Ensemble

For a molecular ensemble functioning in physical space, the equation of state is given approximately by the equation

$$p = \left(\frac{N}{V}\right) kT \quad (B-1)$$

where p is pressure, V is volume, N is number of molecules, T is temperature, and k is a constant. Thus, p represents an energy density in physical space and is one of the most important characteristics of the molecular ensemble.

By analogy, for the human ensemble, we may write

$$p' = \left(\frac{N}{V'}\right) C^* \quad (B-2)$$

where p' represents the consciousness density in primed space (N is number of entities, V' is volume of primed space, and C^* is the average consciousness level in the human ensemble). We can think of this primed space as being just as real as physical space. Perhaps we should think of the primed space as being psychological space.

If one takes more people and puts them in the same volume of primed space, then the consciousness pressure will increase. Of course, if N increases too greatly then equation (B-2) will need to be altered due to the excessively strong interaction between entities, much like the van der Waal's corrections to Eq. (B-1); i.e., we should use

$$(p' - p'_0)(V' - V'_0) = N C^* \quad (B-3)$$

where p'_0 and V'_0 are minimum allowable values of these quantities.

At the physical level, we know that if we set people in the center of a large, physical space, they will exhibit transport behavior and make diffusive excursions over the entire space eventually reaching the seeming boundaries of the space. At other levels, we know that if we set people in the middle of an emotional, psychological or mental space, they will explore and expand to track that space as well. Thus, we see that consciousness exists in many different spaces and the consciousness density is like an urge to expand into that space. The rate of expansion will depend upon the average consciousness level, C^* , just as the rate of diffusive transport in the molecular ensemble depends upon T .

The diffusion coefficient, D , for matter transport in physical space is given by

$$D = D_0 e^{-Q/kT} \quad (B-4)$$

where Q is the activation energy needed for an individual molecule displacement and D_0 is a constant. Likewise, for the human ensemble we might anticipate that the transport coefficient, D' , in consciousness space is given by

$$D = D'_0 f(Q'/C^*) \approx D'_0 e^{-Q'/C^*} \quad (B-5)$$

where f represents some function which we have approximated as an exponential function, and Q' is the activation barrier for state change or change of position in the particular space under consideration. Here, Q' depends upon habits, laws, polarization, moralities, dogmas, etc.

Pointing out that one may describe human evolvment or transport in consciousness space via a simple model, does not mean that there are no seeming

dangers "out there" in the particular space under consideration because there are. However, via such a model, they may begin to be understood, circumscribed and overcome by using thought, care, and creative imagination.

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Figure Captions

Figure No.

1. Symbolic illustration of evolution by passage around the triangle of SELF (123123 ...).
2. Plot of the degree of function versus time illustrating the aspects of recognition, utilization and adaptation for a single consciousness level.
3. Illustration of changing degree of recognition in society with large-scale variations in time.
4. Schematic illustration of alterations in physical biosphere information content.
5. Representation of waves flowing in both positive and negative space--time frames to illustrate how precognitive awareness works.
6. Pictorial representation of molecules moving about in a box, (a) undissociated state, (b) partially dissociated state, (c) completely dissociated state.
7. Distribution of energies for molecules in a box at temperature T_1 .
8. Shift in energy distribution for molecules due to change in temperatures from T_1 to T_2 .
9. Illustration of changes associated with the extraction of all energy states between E_1 and E_2 .
10. Distribution of consciousness, C , for a human ensemble at time t_1 .
11. Shift in consciousness distribution as time grows from t_1 to t_2 .
12. Interaction potential, ϕ , and interatomic force, F , as a function of separation distance, R , between two atoms.
13. Representations of interatomic force types, (a) dispersion forces, (b) dipole-dipole forces.

Figure No.

14. (a) Location of the seven major chakras at the etheric level of substance.
(b) Location of the seven major endocrine glands at the physical level of substance.
15. Front view of the major chakra system illustrating a morphological character of the energy centers (Leadbeater).
16. Side view of chakra system and the nervous system (Leadbeater).
17. Man and his etheric centers illustrating the types of psychoenergetic phenomena associated with each center.
- A-1 Circular orbits of the hydrogen atom showing the electron in the $n = 3$ orbit plus possible energy transitions between orbits.
- A-2 Weight on a spring representation of a simple harmonic oscillator of resonant frequency ν_0 .
- A-3 Intensity versus frequency plot for a single electron transition.
- A-4 Effect of oscillator coupling on the broadening of frequency. The example used here is that of a gas of varying density, each molecule or atom representing an individual oscillation. At low gas densities (large distances, r) coupling is negligible and all atoms radiate (or absorb) within the same narrow frequency interval. As two atoms are brought closer together, they form a coupled resonant system at two diverging frequencies (black regions). When more atoms are added to the coupled system, additional frequencies appear, favoring the upper region (indicated by the degree of shading). The frequency distribution at the smallest r represents the density of states for a solid or a very dense gas.
- A-5 Intensity versus frequency plot for an idealized physical solid (many atoms interacting).
- A-6 Schematic spectral distribution curve illustrating, along one coordinate, relative radiation characteristics of the seven levels of substance.

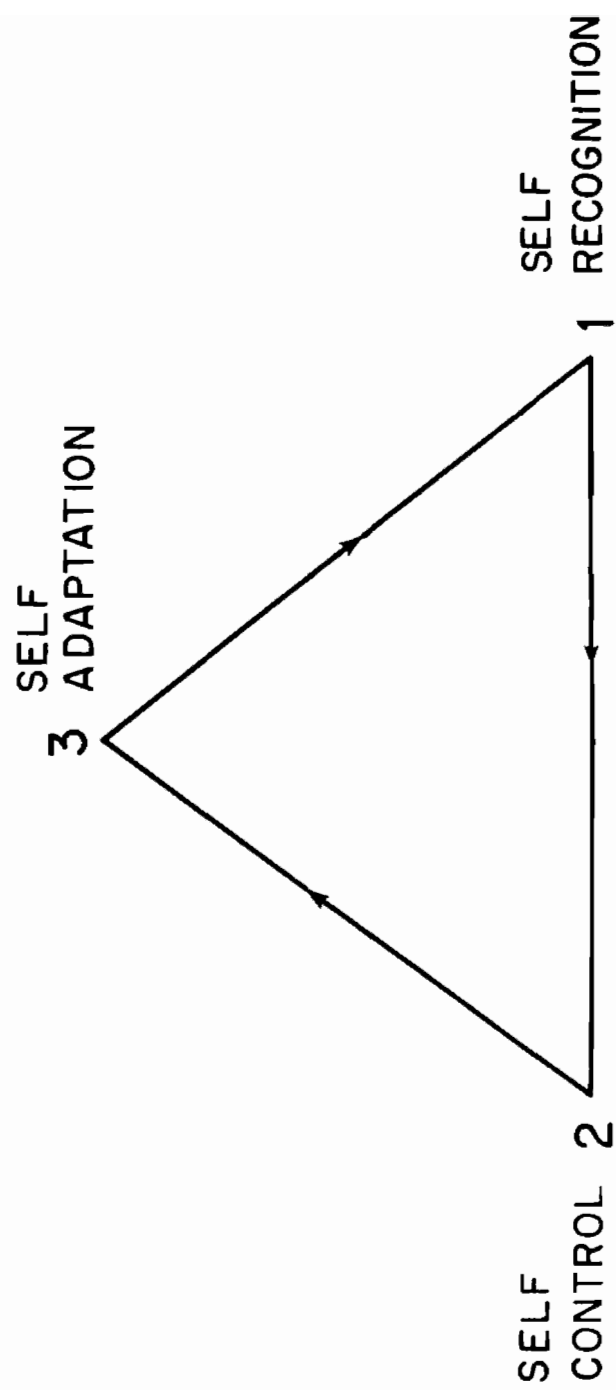


FIGURE 1

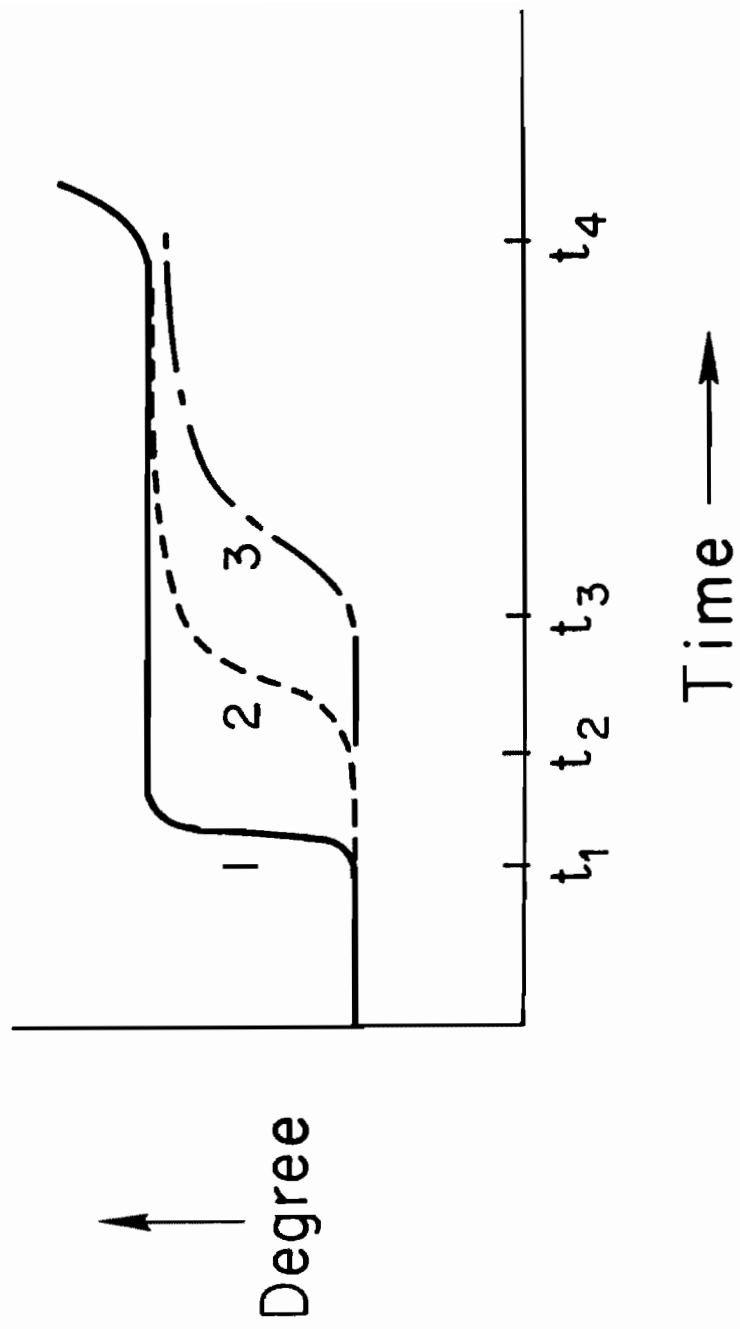


FIGURE 2

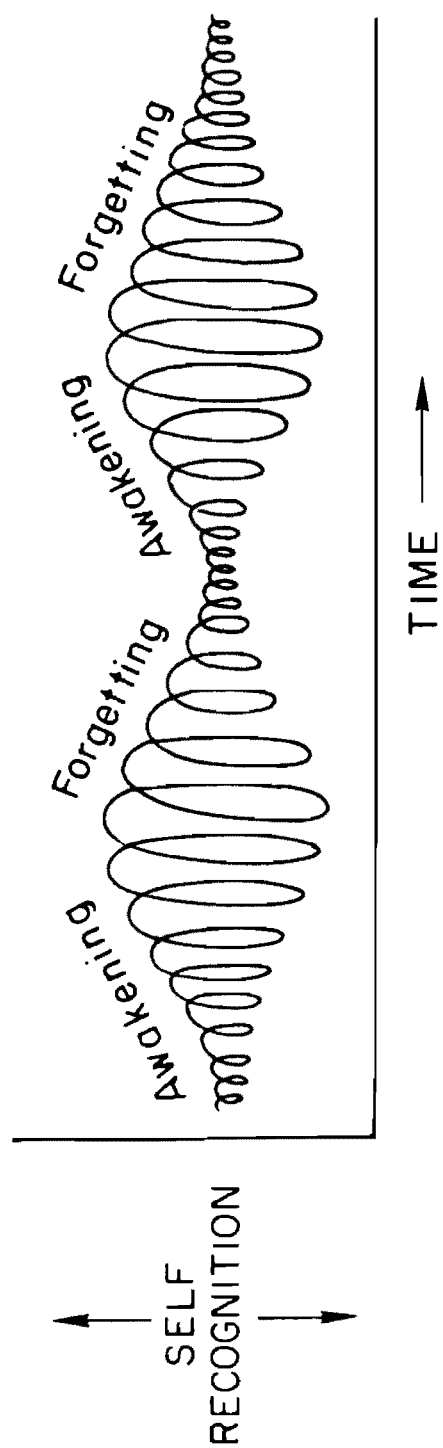


FIGURE 3

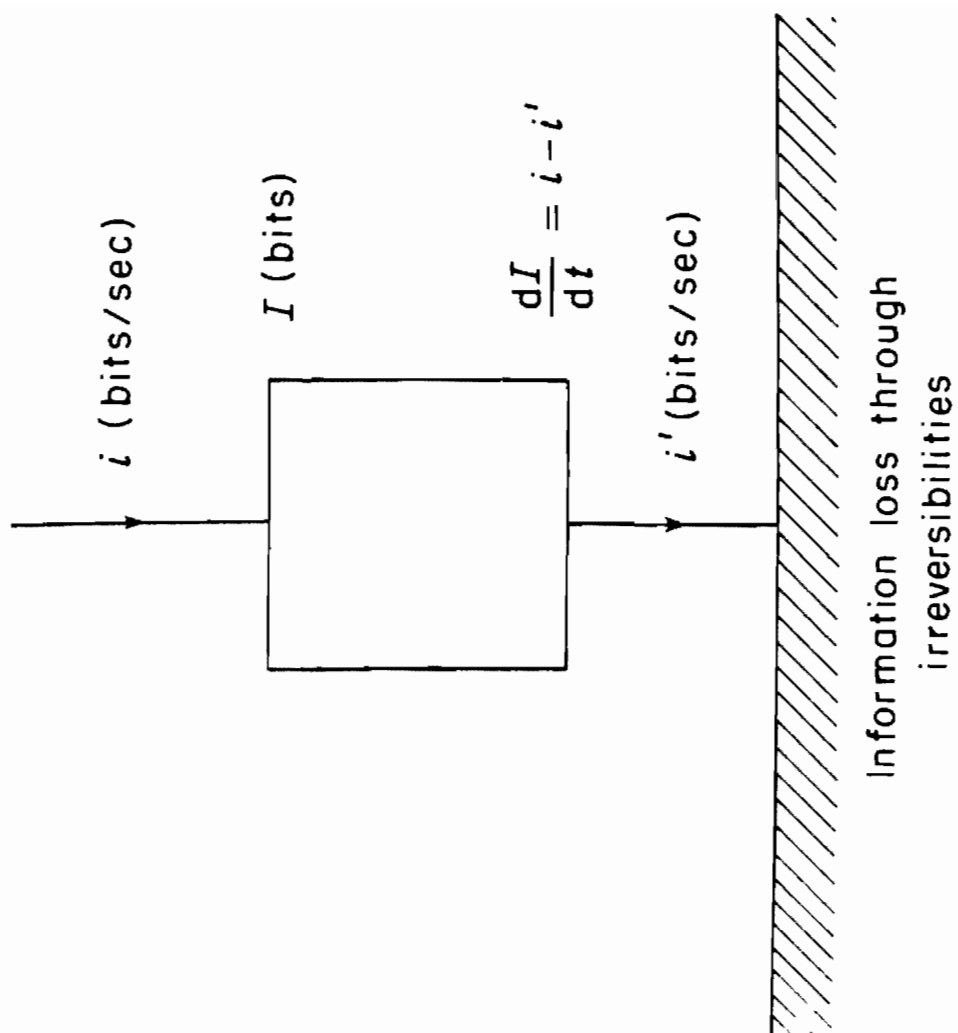


FIGURE 4

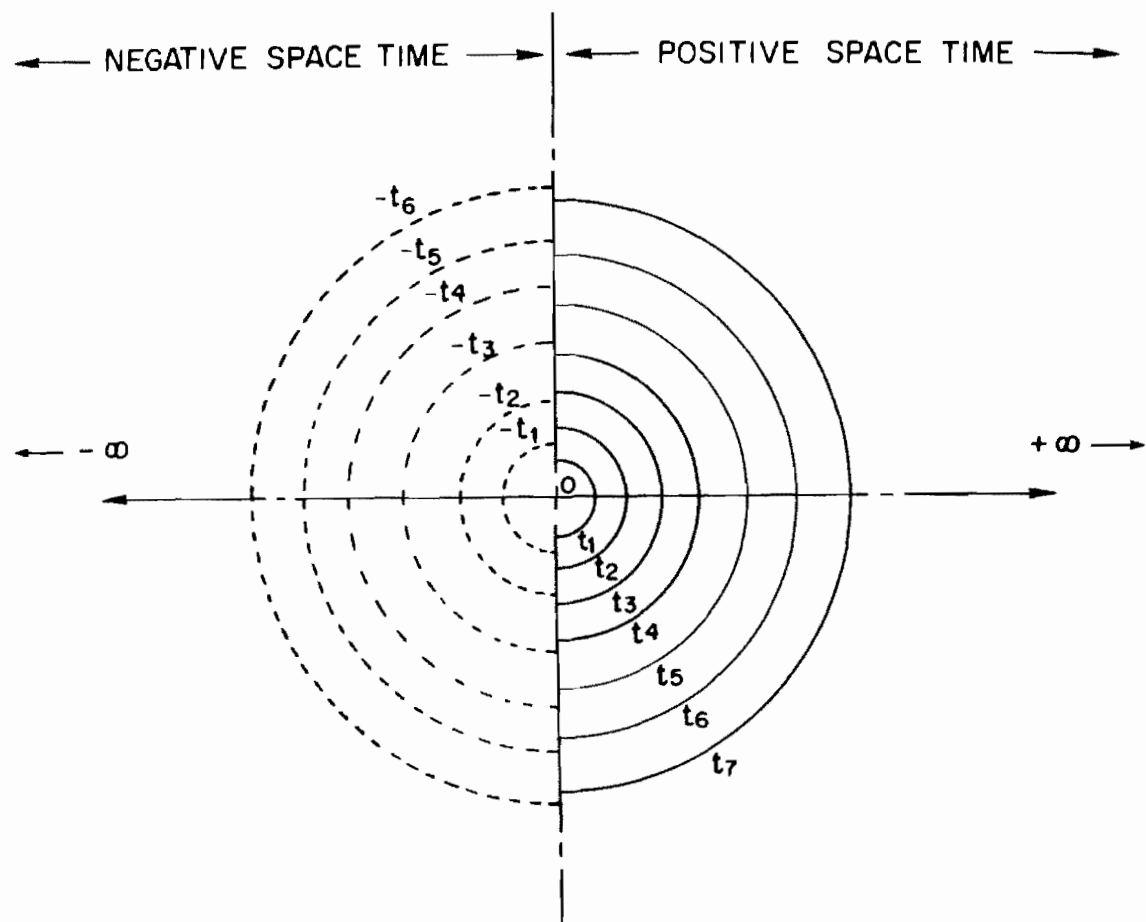


FIGURE 5

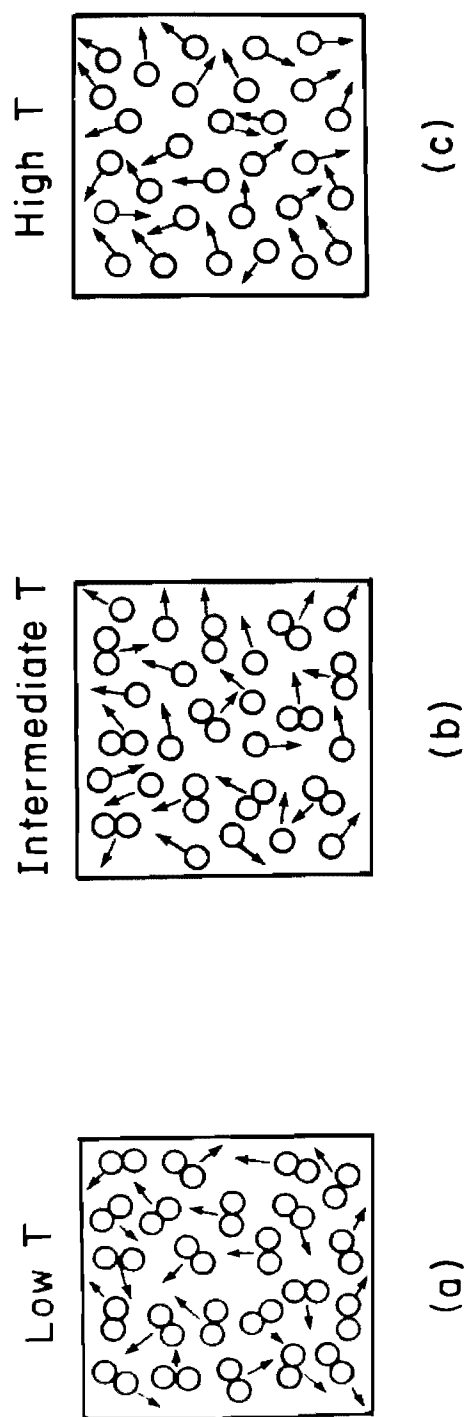


FIGURE 6

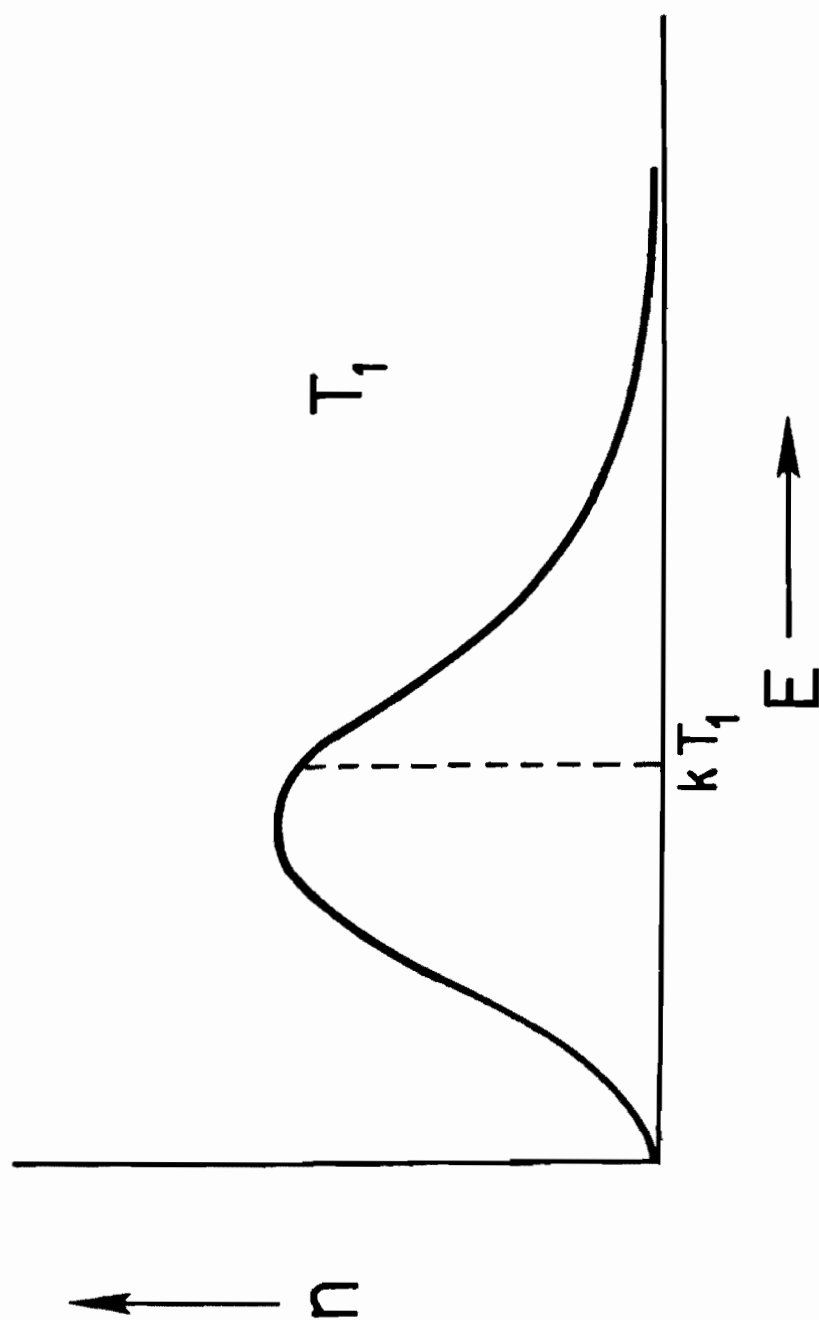


FIGURE 7

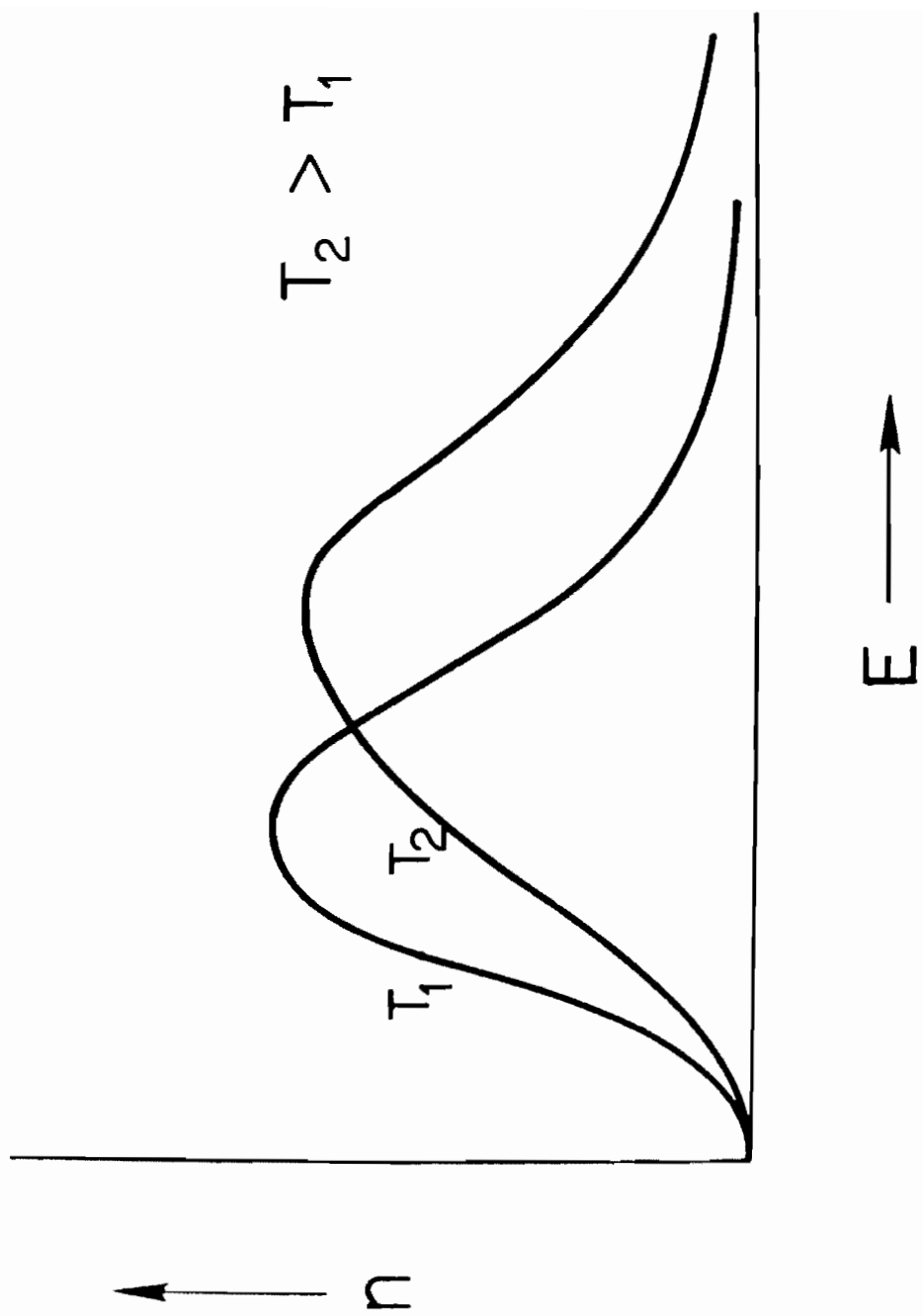


FIGURE 8

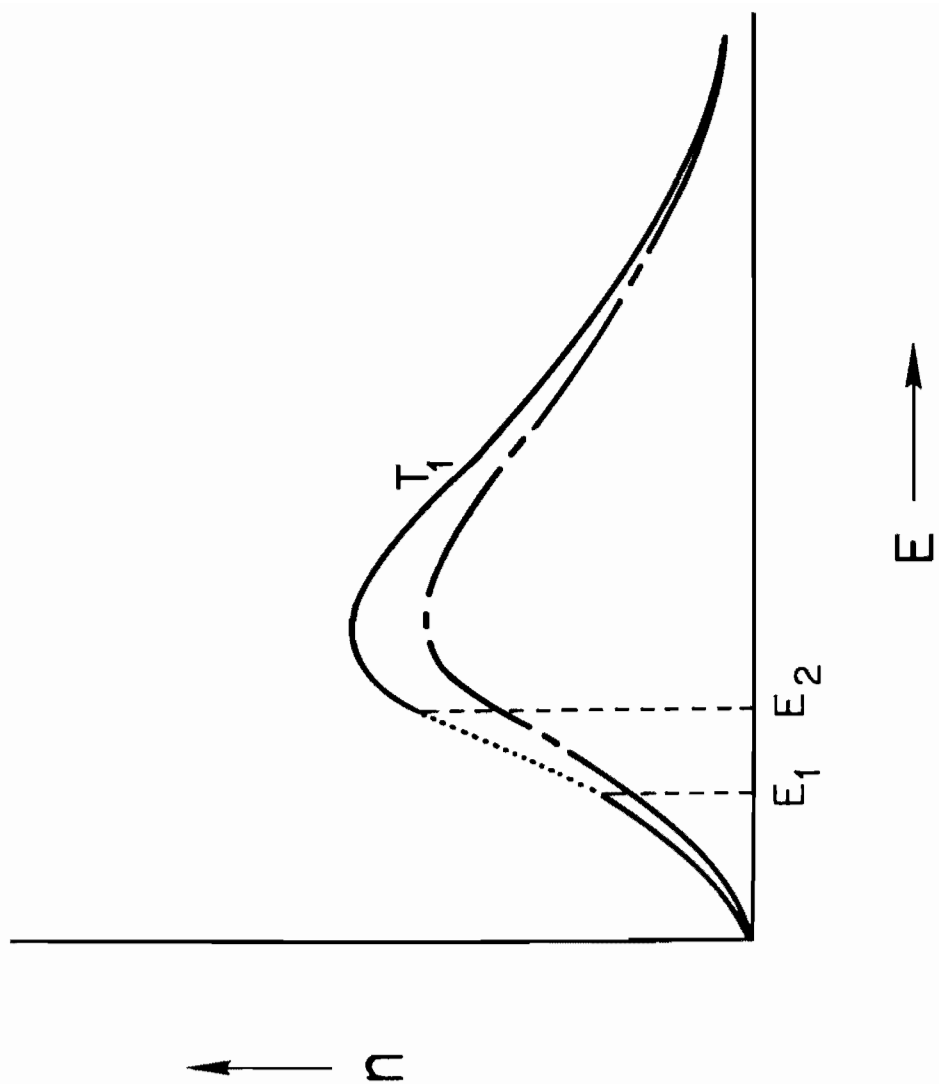


FIGURE 9

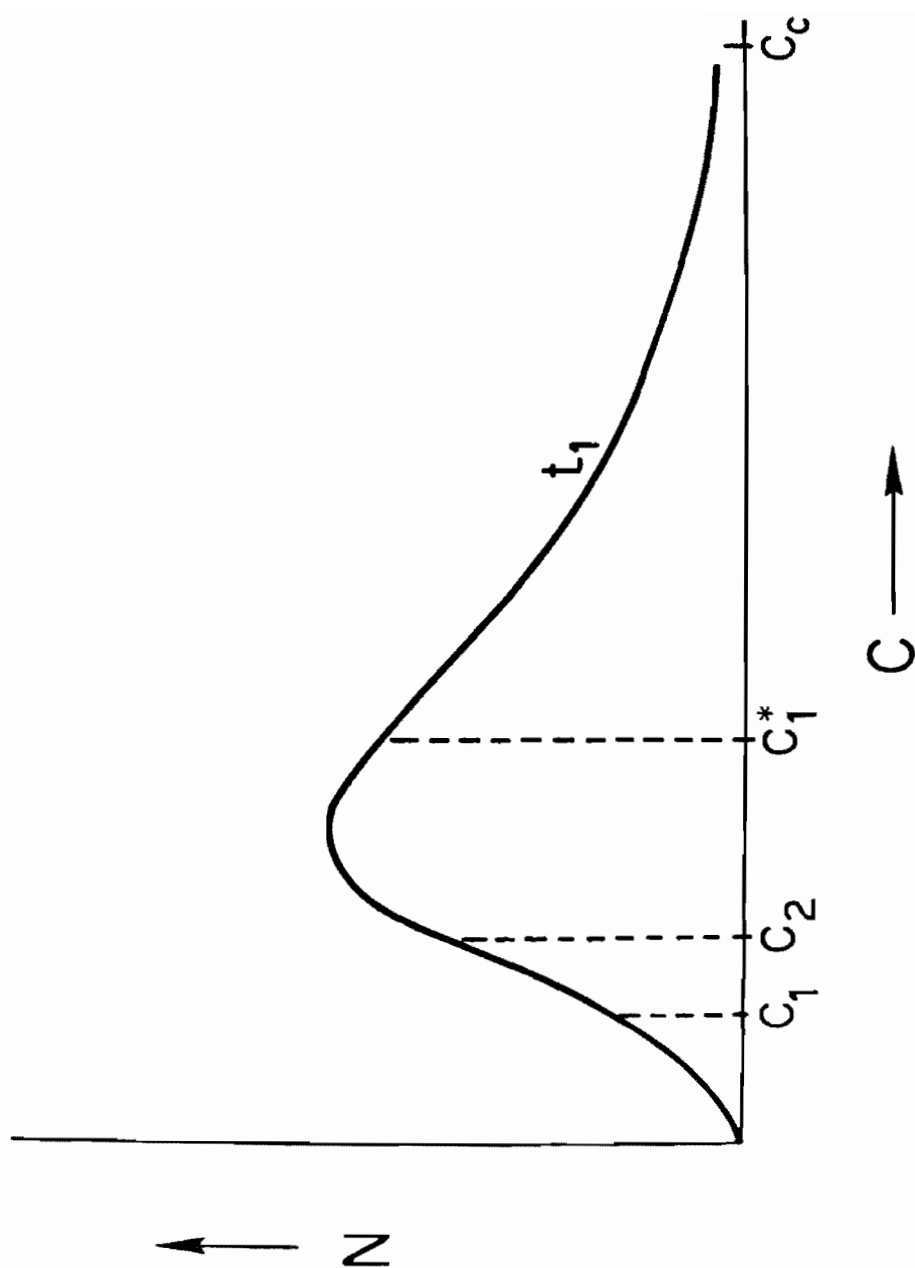


FIGURE 10

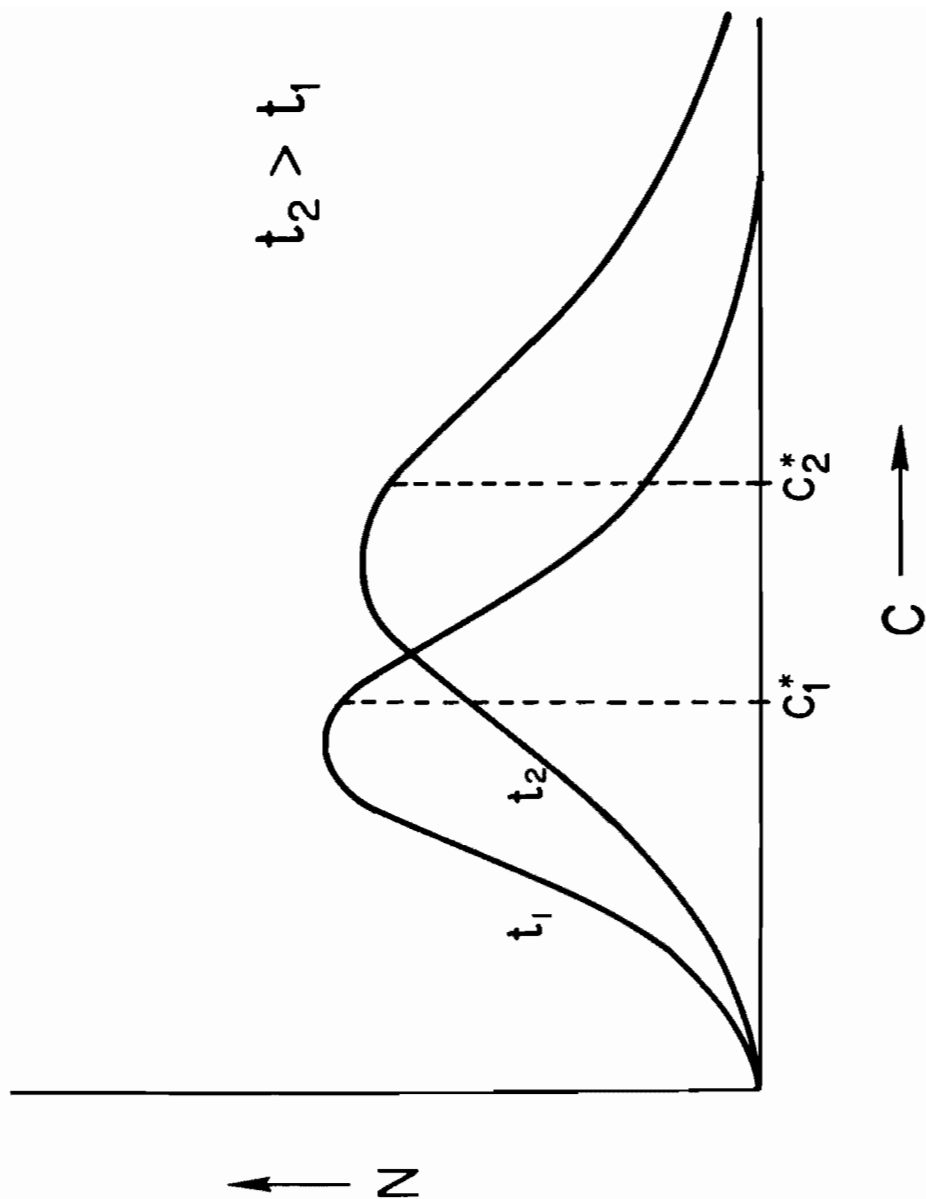


FIGURE 11

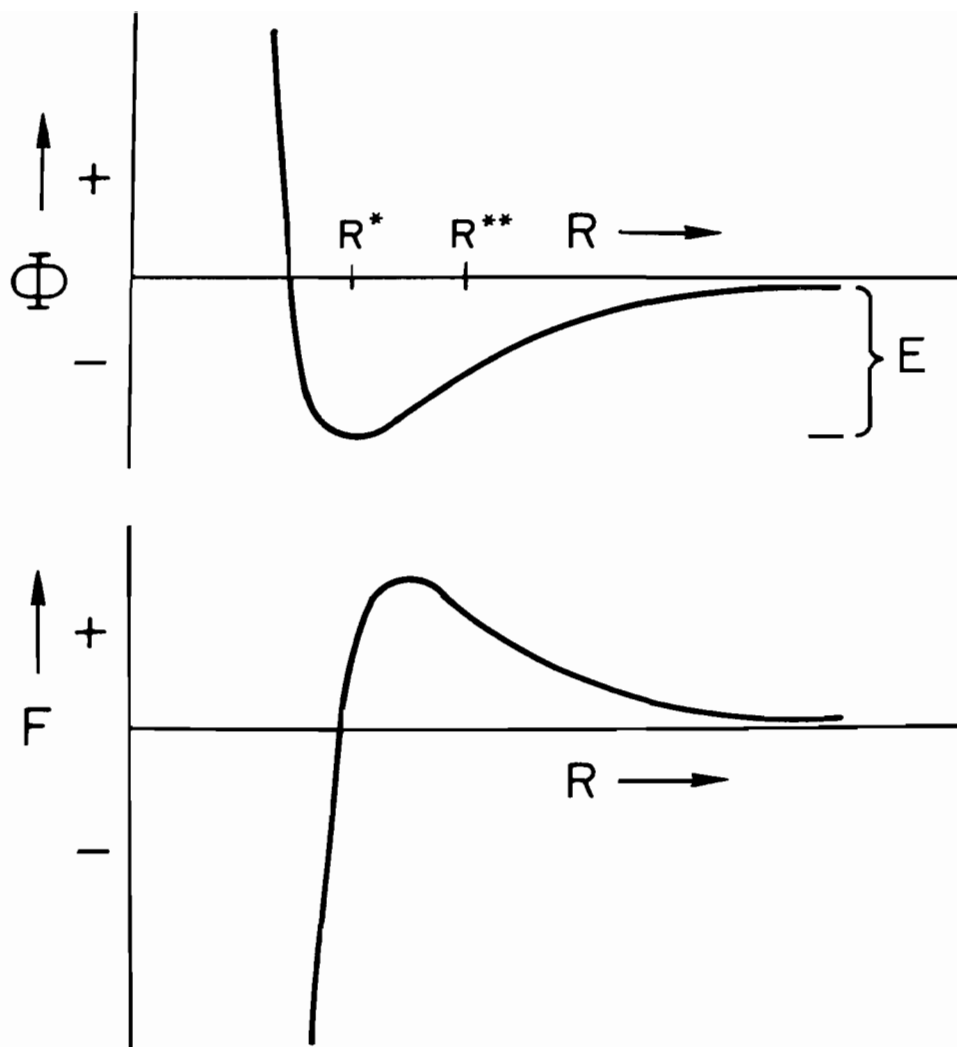
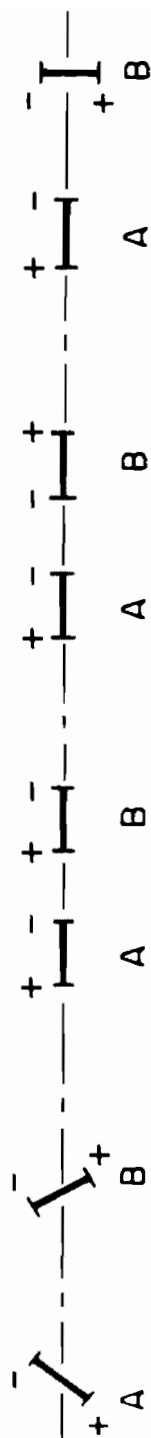


FIGURE 12



(a)



(1)

(2)

(3)

(4)

(b)

FIGURE 13

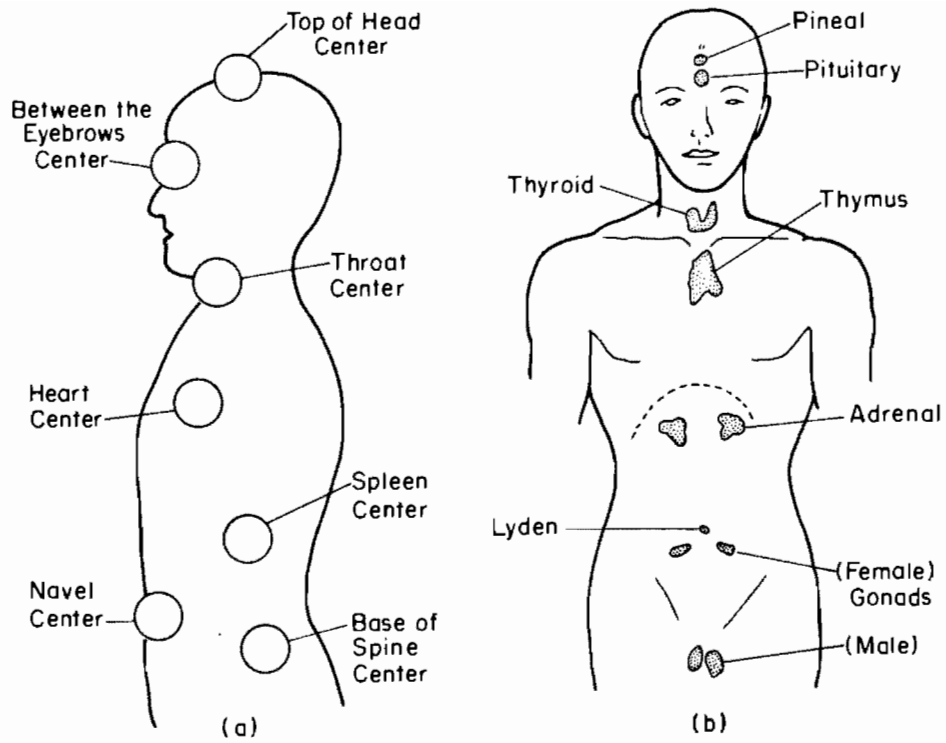


FIGURE 9. (a) Location of the 7 major chakras at the etheric level of substance, (b) location of the 7 major endocrine glands at the physical level of substance.

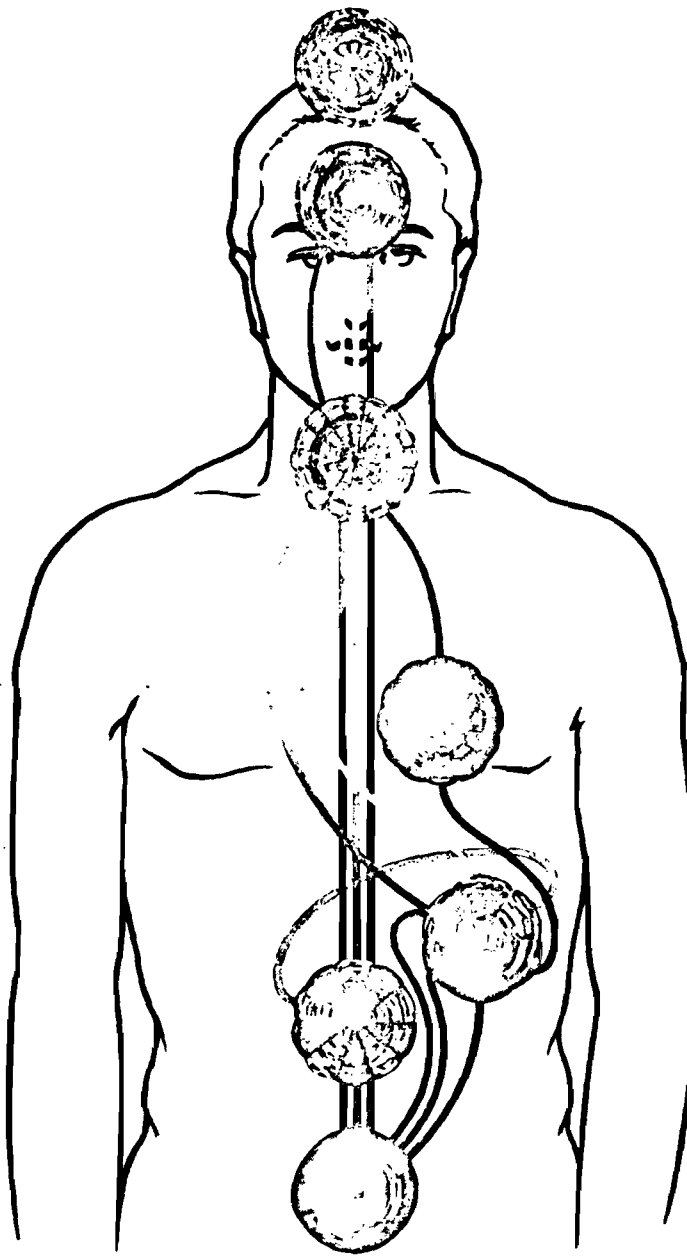
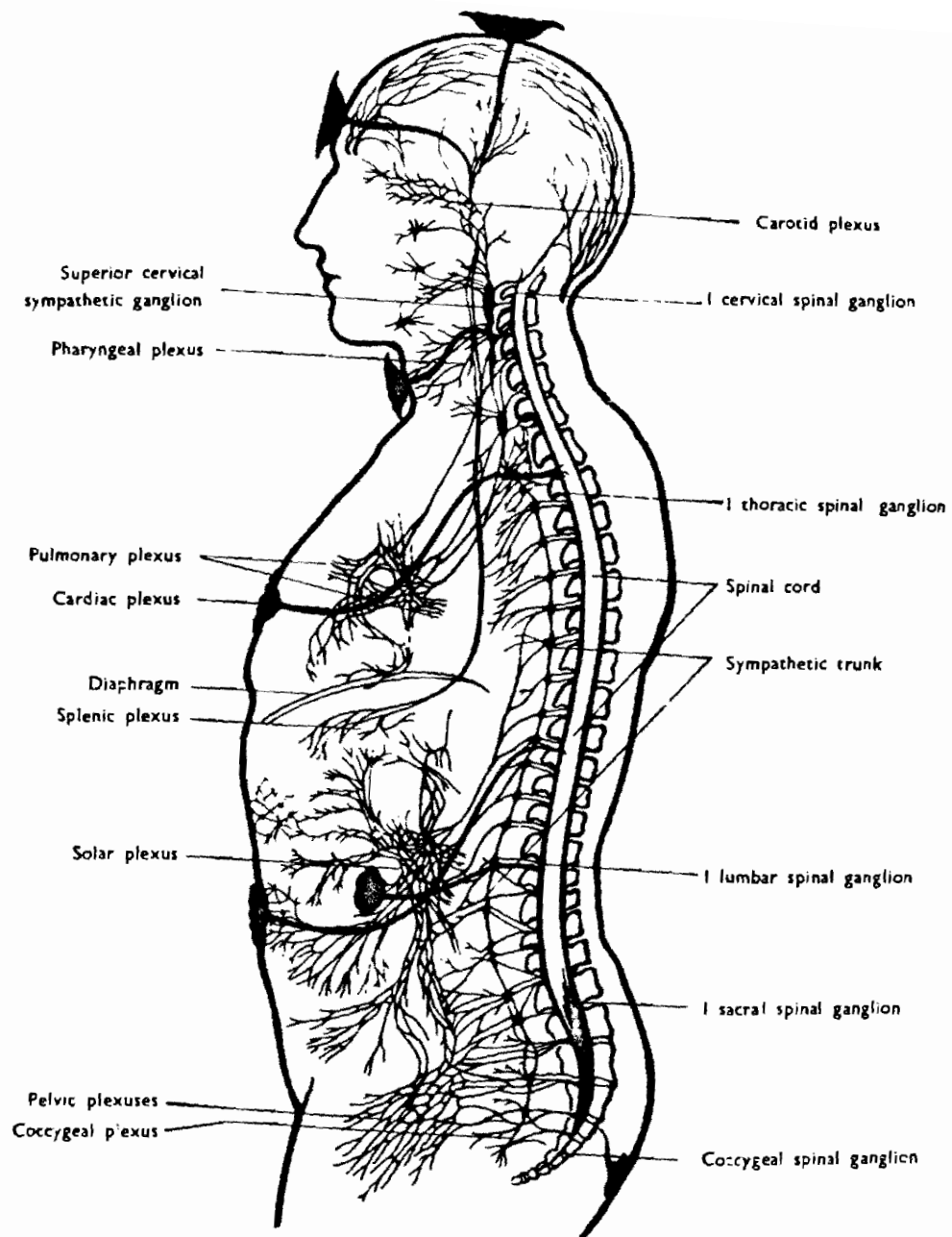


FIGURE 15



THE CHAKRAS AND THE NERVOUS SYSTEM

FIGURE 16

MAN AND HIS ETHERIC CENTRES

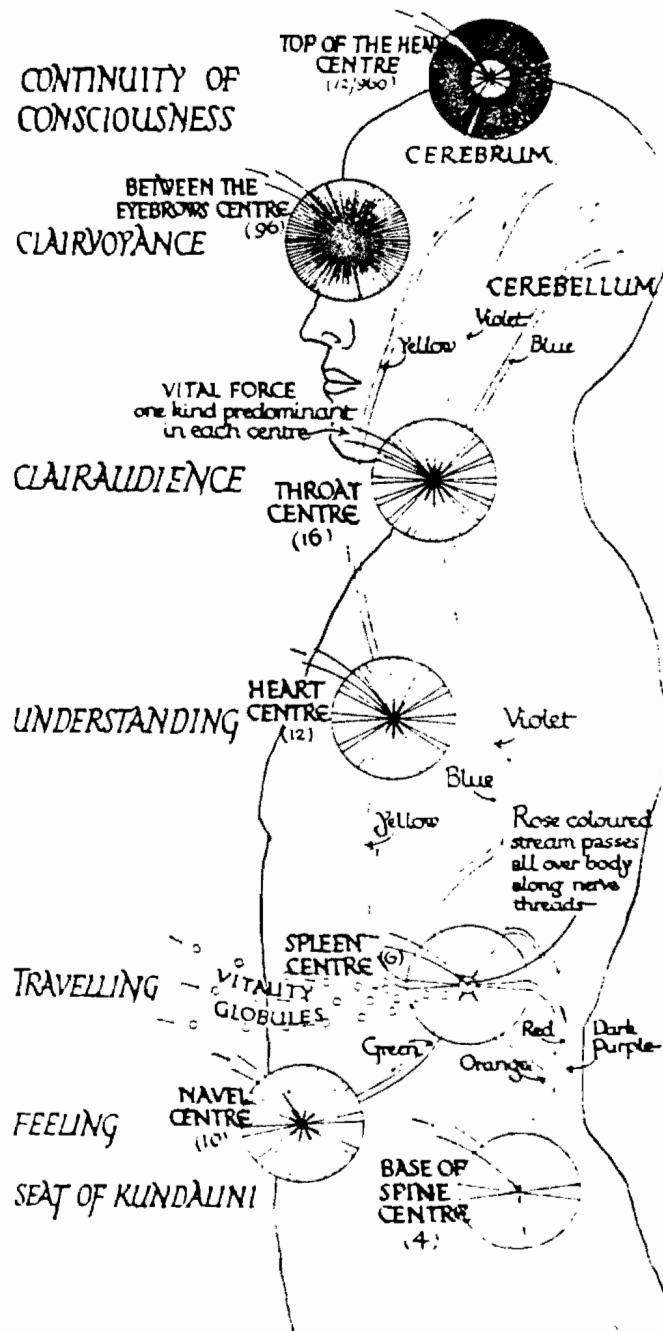


FIGURE 17

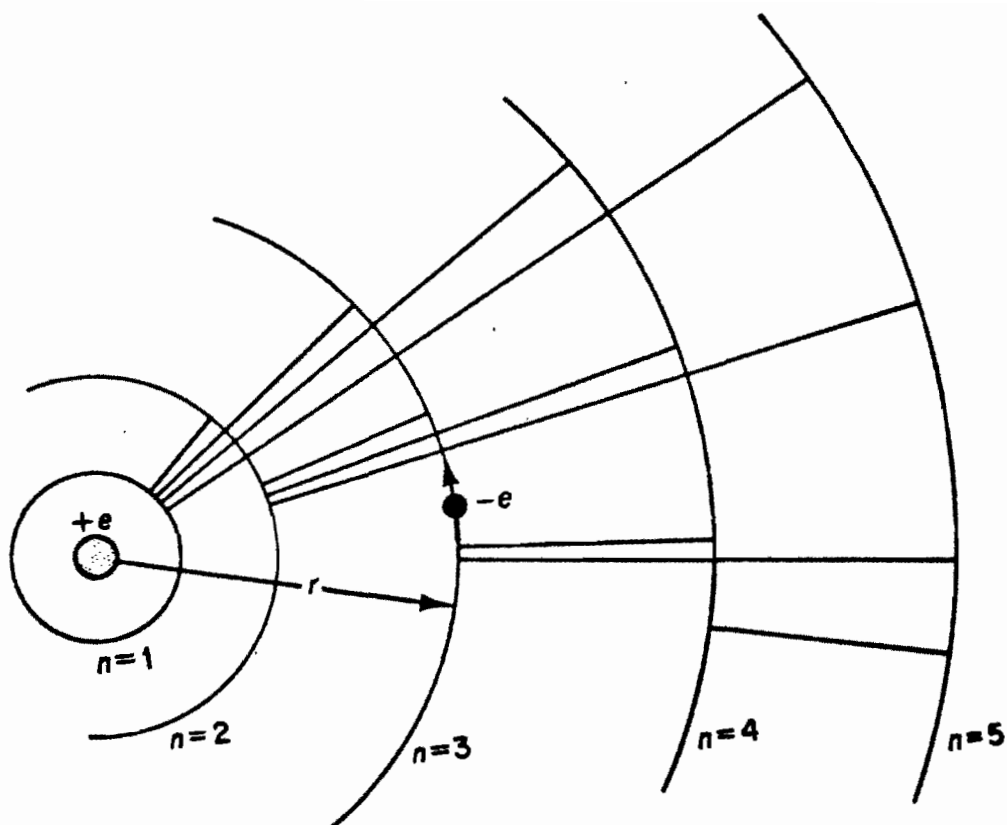
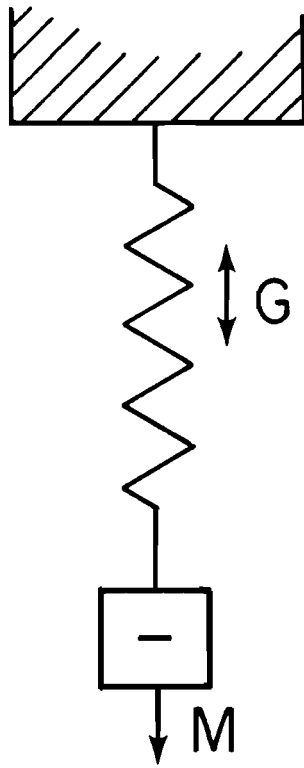


FIGURE A-1



$$\nu_0 = \frac{1}{2\pi} \sqrt{\frac{G}{M}}$$

FIGURE A-2

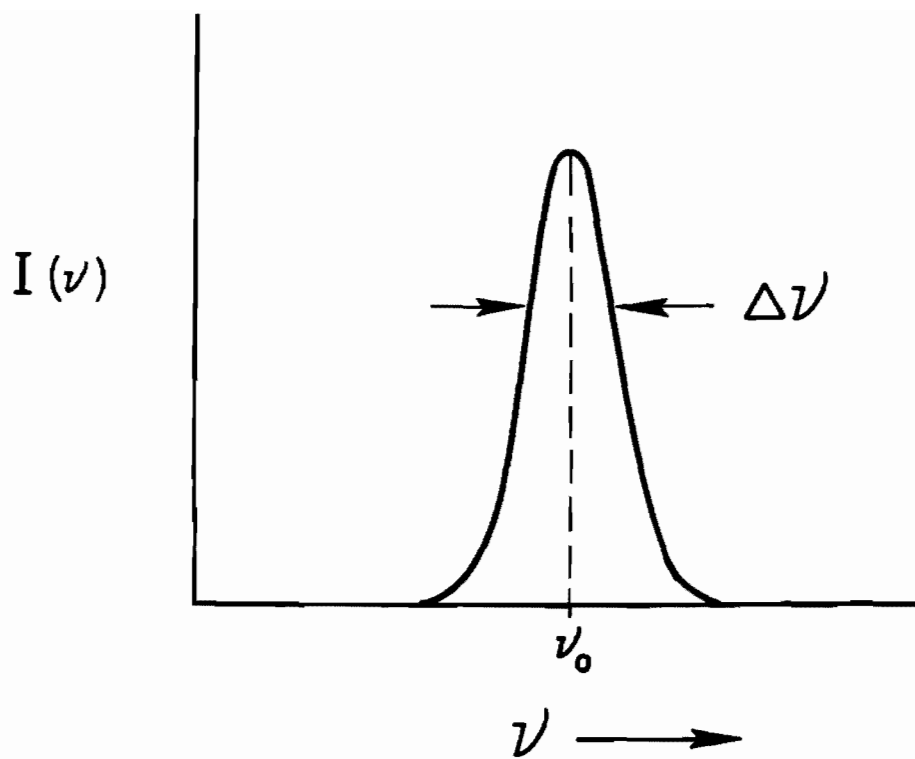


FIGURE A-3

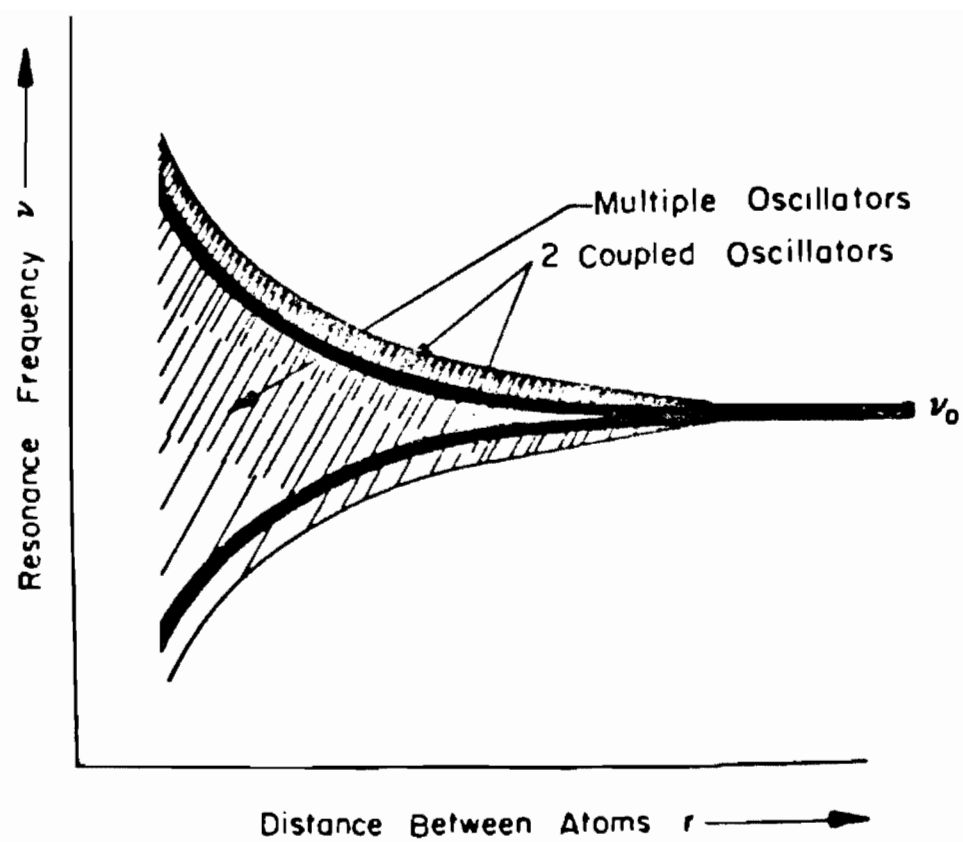


FIGURE A-4

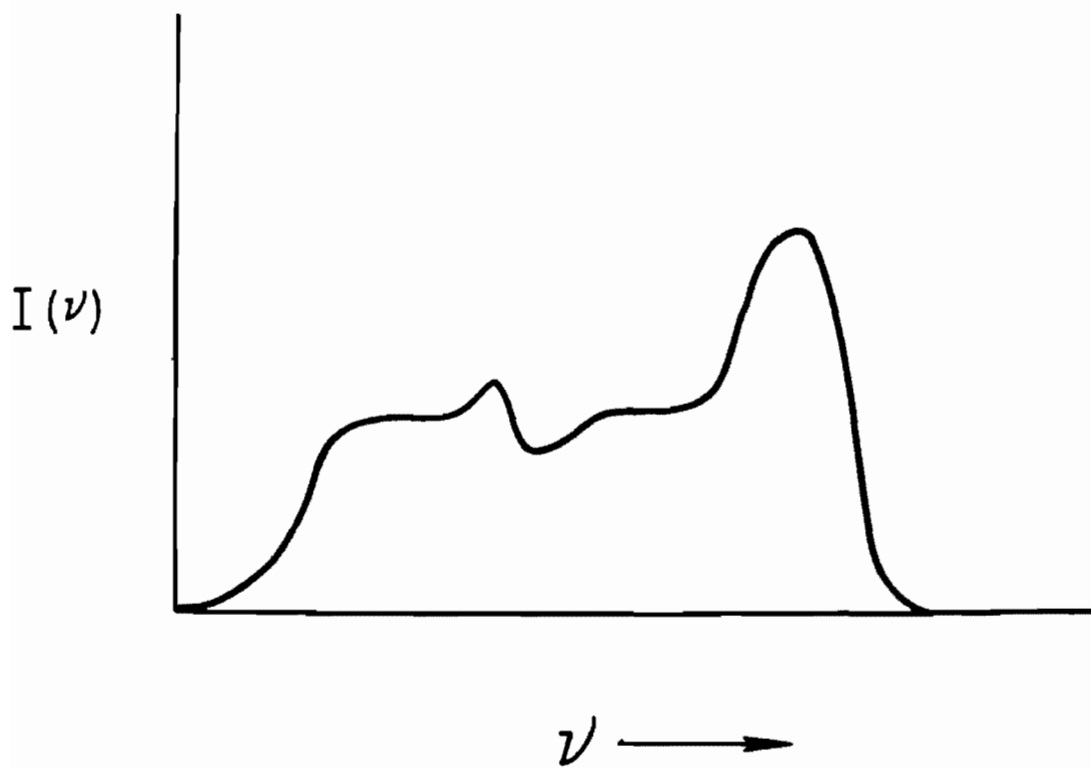


FIGURE A-5

FIGURE A-6

