

BIOFEEDBACK  
AND  
THE HUMAN ENERGY  
FIELD

By

Keith Wakelam

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## **ACKNOWLEDGEMENTS**

Gregory Mitchell's contribution to the understanding of biofeedback techniques and skin resistance measurement, together with its use for mind development, has been immense, as is reflected in the first part of this book. The experimental work that composes the second half of the book in connection with the Human Energy Field has been carried out with the help and co-operation of the Bisley sub-group of the Scientific and Medical Network, in particular: Roger Taylor, Ken Seddington, John Harman, Arthur Neate, Alex Soames, Phillip Salmon, Audrey Edwards and many others who volunteered to be tested, both in England and the United States.

# CONTENTS

Page	
iv	<b>Foreword</b>
	<b>Part One - Tools for Accessing the Human Energy Field</b>
2	Using the Bilateral Psychogalvanometer
5	The Mechanics of the BPG Meter
6	Procedure for Hemispheric Analysis
7	Design Criteria of the BPG
8	Using the BPG Meter for Biofeedback Monitoring
11	Initial Procedures
20	Correcting Maladaptive Response with the BPG Meter
25	Diagnostic Tests
27	The BPG meter in the Hand - Foot Mode
	<b>Part Two - Detecting the Human Energy Field</b>
31	Detecting the Human Energy Field
34	Vortices and Chaos Theory
35	Experiments by the Scientific & Medical Network Sub-Group at Bisley.
36	Further Notes on Research
38	Telepathy Experiments
39	Further Research with a Battery-driven Laptop Computer
40	A Theosophical Interlude
42	The Reiki Initiation
43	Animal Energy Fields
44	The Effect of Drink & Drugs
45	Experiments in America
46	Music, Chakras and the Energy Field
48	Geometry and Harmony
49	Yoga Practices and the Human Energy Field
50	The Natural Resonant Frequencies of the Human Body
52	Auxiliary Equipment
	<b>Appendices</b>
52	Appendix 1, ESP Procedure
53	Appendix 2, Breathing Rates & their effect on Meter Readings
55	Books from Psychotechnic Publications

# FOREWORD

The first part of this book is a revised version of Gregory Mitchell's 'Developing the Mind with Biofeedback' (1979) Copyrighted by Psychotechnics, but now out of print. A booklet that has proved popular with enthusiasts. In view of the direction that our subsequent research has taken, the decision was made to add a second part dealing with what has been discovered about 'The Human Energy Field'. This tends to validate many of the claims made in the original booklet.

Many writers on the occult, mainly Theosophists like H.P. Blavatsky, Annie Besant, C.W. Leadbeater and A.E. Powell (1979), have speculated about the existence of an 'aetheric body' that is invisible and non-physical, that surrounds the physical form of humans, animals and plants, yet which possesses enormous energy, making it capable of both sustaining the living organism and providing a template to enable the organism to grow and retain its form, quite distinct from the genetics of the living cell. It is the source of the 'life force' that can exist even in the void of space and makes possible the transmission of life from one planet to another. The essence of the aether is 'Form' and shaping, achieved by rotating vortices rather than by vibrational frequency, or biochemical structure.

The Chakra system described by Indian mystics from early times provided the only model for the means by which energy could be transformed from a non-physical source to influence a living, physical organism. The Chakras were pictured as vortices, spinning at immense speed, that speed of rotation was what enabled the power of the aether to operate on physical matter. See:- The Chakras - Hiroshi Motoyama (1995).

The author's own views, expressed in 'The Morphism of the Void' (1995) are that the aether consists of 'negative energy', that is, energy in a bound state, as distinct from the free energy states of the physical world. The bound states consist of oppositely charged particles in such close orbits that their spin frequencies are immense. This is because the particles are weightless.

There is a current belief that matter is a form of frozen energy and that matter and energy are interchangeable. This is erroneous, because energy is just the movement of matter. Matter is eternal, though it goes through many changes. Matter is far too complex to be created from an energy packet. Nor is it destroyed when particle and anti-particle meet. It then goes into its 'aetheric form', where matter is invisible and weightless.

Shapes can exist in the 'aether void' simply through the agency of spin coupling, whether lateral or longitudinal. Such shapes have a permanence far greater than any physical form, because the negative energy particles have no mass. The aether shapes manifest themselves as vortices, much as we recognise whirlwinds, hurricanes, typhoons and tornadoes. These vortices are smaller, invisible, more powerful, and more permanent and hundreds of them cover our physical body. Their presence has been detected by their action upon the electrical fields surrounding the body and the electro-chemical processes going on within it. The aetheric forms can exist in a vacuum, even between the worlds in outer space and, as suggested above, is the agency by which life has migrated from one planet to another.

The earliest evidence for the existence of holographic energy surrounding the living organism was obtained by Harold S. Burr at Yale University (1972). Burr's work involved the shape of the electrical fields surrounding salamanders, which in embryos was roughly the same shape as the adult animal. He also found that this field was aligned with the brain and spinal cord. A further discovery of his was that the electrical axis was present in the unfertilised egg.

These discoveries were later reinforced by Kirlian photography, which recorded streamers of light issuing from the fingers. In the case of leaves, the Kirlian electrical effects could still be photographed when part of the leaf was removed. This is the now famous 'Phantom Leaf' phenomenon. See S. & V. Kirlian, (1961) and W. Tiller (1979).

What we have to be careful to state, however, is that these electrical effects, which involve very little power, give no clue as to the enormous aether energies that produced them, since there is no direct relationship between aetheric and electrical energies. A huge attenuation of the life force occurs before it manifests on the physical plane. Nevertheless certain Forms have the capability of interacting with the aether - like the spirals of DNA and particular molecular shapes.

# **PART ONE**

## **TOOLS FOR ACCESSING THE HUMAN ENERGY FIELD**

## USING THE BILATERAL PSYCHOGALVANOMETER

The straightforward Skin Resistance galvanometer was one of the earliest electronic tools used in psychological research. One of the first references to the use of this device in psychoanalysis is in a book entitled 'Studies in Word Analysis' by Carl Gustav Jung, published in 1906. Here the famous Swiss Psychologist describes a technique for connecting a subject to an instrument, which measured changes in the resistance of the skin while words are read to him from a prepared list. If one of these key words were emotionally charged, through past associations with trauma, whether consciously remembered or buried in the sub-conscious, there would be a change in body resistance measured by a deflection of the meter needle of the galvanometer.

By the 1930's, when valve amplifiers came into use, the psychogalvanometer was adapted for use with pen recorders and became a powerful tool in the hands of the Police as a 'Lie Detector'. After the 2nd World War it was popularised by the C.I.A. and the United States Police forces as the Polygraph. But even in these applications it was only detecting emotional arousal as an adjunct of lying. People with abnormal psychoses would not give accurate readings under interrogation because of the pressure of internal, mental activity, which masked the external word stimuli.

Since 1950 the stigma of 'Lie Detection' has gradually been overcome and psychoanalysts have more extensively used the psychogalvanometer as a means of monitoring mental arousal and states of relaxation. Latterly it has come to be used by a subject to monitor himself, with the intention of controlling these mental states consciously. Such techniques can be classified under the general heading of Biofeedback.

As a result of a variety of interacting physiological processes, the complexities of which would fill another book, a change in the state of arousal of the human brain will cause a change in the electrical resistance of the skin. The greatest degree of change occurs in the skin of the palms of the hands, as this is a measure of the large volume of the motor cortex involved with hand and finger movement, the delicacy of touch and sensation required for manual skills and pain reception. The second most sensitive area is the soles of the feet. A rise in cortical arousal will lower the resistance of the skin in these areas, mainly through increased activity of the sweat glands, but also connected with the activation of certain pathways known as acupuncture points. The acidity of perspiration interacts with the metal electrodes, usually copper or silver, to produce small electrode potentials. This is known as the Tarchinoff effect. Conversely a state of relaxation will produce heightened resistance to electrical current. All this is called the simple Galvanic response and until now has been the most commonly exploited physiological process for the purpose of psychoanalysis.

Several researchers have noted in passing that one side of the body gives different responses to the other. See Reid and Inbau (1964). No one bothered to investigate this phenomenon however, with the exception of a little known Czech, Vilem Laufberger. He was a cardiologist by profession, and for cardiology one uses an instrument not unlike a psychogalvanometer. (A very sensitive psychogalvanometer will react to heartbeat by a slight movement of the needle). With a specially constructed instrument Laufberger monitored the resistance changes of the body from four pick-up points, namely, the soles of the feet and both palms. He found that the greatest change would occur at the place in the body where the subject concentrated their attention. For example, if the subject were told to concentrate on their left foot, the reading for this electrode would show the

greatest change. Though this experiment was duly reported, its true significance was not grasped at the time.

The simple galvanic response is a raising or lowering of the body resistance as a whole, as a result of general cortical arousal. In analogy this may be compared with the opening or closing of the whole hand. The selective arousal reported by Laufberger corresponds to a differentiated movement of just one or two fingers of the hand.

The fact that movement of the subject's attention to different parts of the body could cause selective arousal of a particular part of the cerebral cortex and a localised change in body resistance is reminiscent of the intuitive Yogic practice of instructing a pupil to focus attention on the particular Chakras, or energy centres in the body, the stomach, spleen, heart, throat, brow and crown.

The point of using a Bilateral Psychogalvanometer, or differential Meter for short, is that there is a need to be able to measure this selective state of cortical arousal, and in particular, to monitor the differential arousal of the two hemispheres of the neo-cortex. The left hemisphere of the brain generally controls the right hand side of the body, and the right hemisphere the left hand side. This means that, as Laufberger discovered, attention to the left of the body will cause a fall in resistance on that side because the state of arousal in the right hemisphere of the brain is greater.

Of itself, such a discovery is of no great significance. However, if one takes into consideration the fact that the left hemisphere of the cortex usually controls speech, logical action and symbolic functions, while the right hemisphere is responsible for spatial and holistic processes, there is a value in having a simple device to facilitate cognitive growth through the technique of biofeedback.

With this very simple device certain complex phenomena can be easily and clearly measured, whereas previously such results could only be obtained with an expensive and sophisticated Electroencephalograph, which made a detailed analysis of brain rhythms recorded by electrodes pasted at different locations on the scalp. The precise significance of the different brain rhythms is still a matter of conjecture, while the overall arousal is a more definite index of activity, usually linked with a rise in temperature.

The following Chapters will describe in detail the functions and applications of the BPG device. It will then be evident that this meter constitutes something of a breakthrough in simple bio-monitoring equipment, bringing sophisticated psychoanalytical and mind development techniques within the reach of the training and teaching professions.

There has been a further new development, which enables the high-frequency variations of body resistance to be analysed by computer and used to present an averaged frequency spectrum of the subject. The frequency of these variations is far higher than can be accounted for by the actions of the nerves. Nevertheless, the energy peaks on this frequency spectrum can be seen to vary from person to person and may be found to relate to physical and mental functions in a very definite way. This technique was first discovered by Valerie Hunt of UCLA in connection with Electromyography (1976 *The Infinite Mind*).

A survey of the energy fields of a number of different people has been conducted both in Britain and the United States to refine the relationship of the energy peaks that are observed and see if they can be correlated with personality traits and professional ability. The early results are quite promising and a broad band of interpretations can be derived, which will be further defined by more energy field measurements. The discovery of these discrete peaks in the human energy field will come as no surprise to those who follow the disciplines of Yoga.

They will have no difficulty in identifying such frequencies as the successive centres of the Chakras, or vortices by which energy is transmitted from the aether to maintain the human body. The tiny electrical effects are merely the correlate of a much greater force which otherwise exists in a medium beyond the limits of our normal physical world.

## THE MECHANICS OF THE BPG METER

It is first necessary to understand the basic operating principles of the BPG Meter in order to see how it can be used for various experimental purposes.

Connected to the Bilateral Psychogalvanometer are two sets of double hand electrodes. Electrode A is held in the left hand and electrode B in the right hand. The balance control has to be adjusted so that the centre zero Meter needle is not moved from its central position, and reads zero at the centre of the scale. Then, if one has a response to some stimuli, which produces an equal change all over the body, the resistance of both hands will be the same and the Meter will show no alteration.

However, if the fall in resistance in some part of the body is of the Laufberger type, particularly if it is a fall in resistance in one hemisphere of the brain, due to increased activity, the meter needle will be deflected in a direction opposite to that arousal. In a correctly calibrated Meter it will be possible to ascertain the relative ratio of resistive change, and from this the relative amount of arousal of both sides of the brain.

Therefore a fall in resistance measured by the electrodes held in the left hand will indicate a higher arousal of the right brain hemisphere, and vice versa. Care is necessary that the indicated left hand electrodes are held in the left hand and similarly, the right hand electrodes in the right hand. If this is done then the Meter can determine initially which side of the brain is habitually more active in the resting state. This is a good indication of hemispheric dominance. In such cases the Balance control would have to be adjusted from its central position of '5' to accommodate the variation. Right brain hemisphere dominance would be indicated by having a shift the balance control towards '6' in order to obtain the central zero reading of the meter needle, while a movement towards '4' would indicate left brain hemisphere dominance.

This method of measuring brain hemisphere dominance at the outset is a useful indication of personality type and the level of response likely to be realised in tests.

## PROCEDURE FOR HEMISPHERIC ANALYSIS

Selected stimuli or simple tasks have to be provided for the subject, which would involve one or other side of the brain in typical cases. For example, the subject is asked, first of all, to perform a task in verbal reasoning, like the conundrum of the man looking at a portrait and saying 'brothers and sisters have I none, yet that man's father is my father's son'. The subject is asked to identify who the person is in the portrait. Next one could set simple tasks in mental arithmetic from multiplication tables. A right-handed deflection of the meter needle in each case would then show lowered resistance in the right hand as an indication of increased activity in the left-brain hemisphere, due to the crossover of the brain's circuits from right to left. The above statements should hold good in the majority of cases, whether or not the subject is left or right handed. But different reactions will occur in some left-handed persons, which will be mentioned later.

Secondly, the subject is asked to visualize a familiar scene, some place well known to them, such as the living room of their home. Alternatively they can be asked to mentally perform some spatial operation, like tying a knot. In such exercises the meter needle should move to the left, indicating that the right side of the brain is activated. Because we live in a mainly right handed, left brain dominated culture, some people will cause the needle to move to the left for a right hemisphere operation with much less amplitude than for a verbal, left hemisphere task. This can be counted as a minor species of learning disability.

In a large proportion of the population the left-brain hemisphere is very dominant, because of the stress laid in education on the development of reading and writing skills. Usually such people are easy to detect because they are not very good at tasks involving visualisation or spatial location. When the left hemisphere has this form of extreme dominance it will try to snatch away a right brain hemisphere task. When this happens there will be a brief swing of the needle to the right followed by a smaller swing to the left.

Nature has provided us with a considerable amount of built-in redundancy of grey matter in order to protect us against the worst effects of brain damage. Each brain hemisphere does therefore have a limited capacity for performing the tasks appropriate to the other hemisphere. Thus there is in the left-brain hemisphere a limited capacity to function on spatial or holistic tasks. For many people this limited capacity is the one they have reconciled themselves to living with. Although excelling at some profession, which provides them with a substantial salary and prestige, they suffer from lack of fulfilment in many other aspects of human activity. It is only necessary to cite the clumsy Professor, who cannot even mend a fuse or knot a tie, or the gifted artist who is unable to communicate with others.

A tiny minority of subjects will cause the meter needle to deflect to the left, irrespective of the task they are asked to perform. This class of person has extreme right brain hemisphere dominance. They will be attempting to do everything with this side of the brain. They can usually be detected because of speech difficulties, aphasia, and stutters. They may have dyslexia or just be poor readers and are frequently left-handed. They will however be good visualisers, very capable as regards manual skills, but rather emotional.

However, unless there has been extensive brain damage, people with extreme hemispheric dominance on either side can be trained with the BPG Meter to activate the appropriate hemisphere for each task. The exercises necessary to produce this correct allocation of activity are described later in this book. The single most important feature of the training, is the ability of the subject to see which side of their brain is active, by watching the Meter needle. This is the essential benefit of the Biofeedback system.

## **THE DESIGN CRITERIA OF THE BPG**

The amplifier necessary for this type of Meter must be up to one hundred times as sensitive as the one used in a simple psychogalvanometer. This is because the changes in skin resistance that need to be detected are so much smaller. The focussing of attention in one hemisphere of the brain will cause a smaller change than an arousal of the whole brain and body. The relative differences between left and right sides of the brain in such cases may be less than one percent. The best analogy is that of a very delicate chemical balance, which will detect minute differences in mass. In addition, the double electrodes used can contact only a smaller area of the skin of each palm, so the basal resistances of the simple GSR Meter must be multiplied by a factor of three.

A switch is provided in the electrode sockets of the BPG Meter so that, if one electrode plug is withdrawn, an appropriate resistor will bridge it. This enables the BPG Meter to be used as an ordinary GSR Meter, to measure the overall resistance of the body. A separate scale is provided on the Meter for measurements in this mode. A measurement of the basal overall body resistance is necessary in order that conclusions can be reached regarding the likely responses of a subject. An appropriate development technique can then be selected for every individual.

For these purposes the amplification must be decreased so that readings do not go off scale. The BPG can then be used as a simple GSR Meter for preliminary exercises to bring the body resistance of the subject within the range necessary for bilateral readings.

The performance of the BPG Meter in the Bilateral Mode can be enhanced by the use of foot electrodes. Besides bringing a larger area of skin into contact with the electrodes, the hands are left free for the performance of tasks related to left and right brain stimulation.

To summarise this Chapter, there are different states of arousal in each brain hemisphere in relation to specific tasks, which may be undertaken. Since the hands are connected to a large area of the Hippocampal Motor Gyrus in each opposed brain hemisphere, the electrical resistance of each hand will reflect the activity in that opposed hemisphere. This applies also to the soles of the feet. The differences of resistivity between each hemisphere can be displayed as a meter reading by a suitable instrument with a high gain amplifier.

The simple, Bilateral Psychogalvanometer will therefore perform a useful function of recording which brain hemisphere is working on a particular task and by demonstrating this, will enable the subject to be trained to use their brain more effectively. Such techniques, which formerly could only be performed in a well-equipped laboratory, can now be used as part of curriculum classroom training.

## USING THE BPG METER FOR BIOFEEDBACK MONITORING

There are two ways in which the BPG Meter can be used to monitor mental processes. The first has already been touched on and consists of measuring the selective arousal of the two hemispheres of the brain. The second method is to measure the selective arousal of the frontal lobes of the cortex in relation to the rest of the cortex.

The importance of being able to determine the arousal of the frontal lobes of the brain on each side with respect to the rest of the brain hemisphere is that activity in the frontal association areas, sometimes called 'the silent areas' of the brain, is a good measure of cognitive ability. The more associations one uses the grey matter in this region in relation to ongoing tasks, the more likely it is that a sensible outcome will be realised. In certain individuals, for various reasons, the use of the frontal lobes has been inhibited. This restriction enables certain types of activity to be undertaken without nagging doubts and extensive introspection. It can be seen, however, that this kind of unbridled activity gives rise to an unbalanced type of behaviour. It will also overtax other centres of the brain, if allowed to continue without some kind of control.

To make measurements in this mode, Input A of the Meter must be recording from standard double copper electrodes held in one hand, while Input B is measuring from a copper foot electrode on the same side of the body. The foot electrodes must be of the same area and metal as those of the hands, since if they were larger they would indicate a lower resistance and if different metals were used they would have different electrode contact potentials. For those wishing to pursue this line of measurement a description of suitably balanced electrodes is given in the next Chapter.

Briefly, the physiological justification of this procedure is that the frontal lobes of the brain affect the complicated movements of the hands, while the feet are controlled by more primitive centres in the rest of the cortex, extending downwards towards the Limbic lobe. The activity of these respective centres of the brain will thus affect the electrical resistance of the hands and feet in different degrees.

However, in order to use the BPG Meter successfully as a biofeedback device, it is first necessary to define the nature of the process fully and some of the basic philosophy on which it is founded. Although the term Biofeedback only came into use in the 1950's, in connection with electronic instrumentation, the concept has been in use under other names, without instrumentation, for a much longer period.

The Guru, or teacher of Yoga, could be said to act in the role of a sophisticated biofeedback device, since, in essence, such a teacher undertakes a lengthy discipline of mental control, dietary and physical regimes, which sharpen and attune the senses to the point where he can detect minute signals from a pupil which give him clues as to their personality and state of cognitive development. On the basis of such readings he can proceed to prescribe exercises, which will expand the capabilities of the pupil.

The same can be said of the trained psychoanalyst. People with such different techniques as Norbert Weiner and Sigmund Freud were intuitively aware of the use they made of minute signals from their patients, which they 'amplified' in the manner of biofeedback material and used to make conclusions regarding the state of mind of their patients.

Sigmund Freud in his early works suggested that consciousness and reasoning formed only a small part of human motivation. The largest source of such motivation lay in unconscious drives and appetites. For most people, civilised behaviour and culture could only be maintained through coercion by a powerful

minority of the vast majority. If this majority were left to themselves and allowed to indulge the force of the unconscious Id, or the pleasure principle, then there would be a return to a barbarism such as we have witnessed repeatedly in recent times.

In Freud's later works there is a growing thread of optimism from his realisation of the possibilities of reading very minute indications as a guide to inner mental states. He wrote, "We may insist as much as we like that the human intellect is weak in comparison with the power of human instincts and be right in so doing. But, nevertheless there is something peculiar about this weakness. The voice of the intellect is a soft one, but it does not rest until it has gained a hearing. Ultimately, after repeated rebuffs, it succeeds. This is one of the few points about which one may be optimistic about the future of mankind. In itself it signifies not a little, and one can make it a starting point for yet other hopes. The primacy of intellect certainly lies in the far, far, but still not infinite, distance."

Normally our unaided perception of our own motor output will suffice for the needs of existence, although even here, artificial aids to perception are common. Spectacles and hearing aids are examples. Microscopes and telescopes further extend. Until recent times the most important survival factor in human society was the ability to control behaviour, to dissemble and 'do in Rome what Rome does'. One had to closely monitor one's output into an external environment, a wrong word in a fascist, or militarist, society might result in a prison sentence, or worse, if the 'Thought Police' were listening. It was necessary to behave correctly in order to succeed, or even survive. In such societies the whole attention of the individual is turned outwards, extroverted towards external events. So, even today, our inbuilt conditioning is poorly adapted to perceive our inner universe, our unconscious motives and emotional drives. Detailed introspection is the last of the mental faculties that people are concerned with in a modern technical society. It has to be left to people in closed religious orders, where long periods of contemplation under instruction is necessary to activate the frontal lobes of the brain and make use of its powerful association abilities.

The unused frontal lobes do sometimes try to get messages through to us, playing tricks on us to get attention. The response of psychiatrists in extreme cases has, until very recently, been pre-frontal lobotomy, cutting out the frontal lobes. The patient was left with little self-awareness and no chance of finding out what the trouble was.

Biofeedback allows us to circumvent this poorly organised feedback loop. By amplifying the unconscious signals their interpretation is made easier. One thus has a crutch to lean on until the goal of internal reorganisation is reached, then the crutch can be discarded. It is thus possible to reach an enlightened state, such as one might attain after years of meditative study in a closed order. It would otherwise be many generations before the majority of the world's population could share the same abilities by the lengthy process of natural evolution in free societies.

With aid of biofeedback devices acting as a supporting crutch for our sensory apparatus, humanity can pick itself up by its own bootstraps. Without this aid the majority of the population would not even be able to start to make progress.

To give another analogy. Our forbears may well have lit fires in the past by rubbing two sticks together, or by keeping flints and tinderboxes for this purpose. Making fire required a lot of time, energy and skill by these methods. Now we have matches to light fires. It is doubtful whether anyone would be willing to return to the older methods of lighting fires.

Before moving on to describe the actual techniques involved in mental development, brief mention must be made of another prophetic philosopher who wrote about the evolutionary role of mankind. With uncanny insight Friedrich

Nietzsche stated in 'Thus Spake Zarathrusta' that the prime function of man is to evolve into a higher state by an act of his own will. He says: 'Man is a becoming rather than a being; he is a rope across an abyss, stretching from the savage to superman' and 'when superman comes, ordinary humans will only be a laughing stock and a sore disgrace'.

## INITIAL PROCEDURES

Before taking Bilateral readings it is necessary to measure the overall body resistance. This measurement affects the degree of significance that is given to the Bilateral readings. With a lower overall resistance one would expect to have greater bilateral indications, and vice versa. To access measurement of the overall resistance, or Mode 1, only one set of double electrodes is used, the electrode plug being inserted in the right hand socket and the electrodes held in one hand. Set the gain control to a low sensitivity.

On taking up the electrodes it may be two or three minutes before the needle gives a steady reading. This is because the metal is cold to the touch and this causes a heightened resistance reaction on the palms. The copper contacts provide a large area, which touches the skin. Folding the hand around them provides adequate contact if the palms are allowed to face downwards so that the mere weight of the hand is resting on the electrode. Do not grip the electrode or try to fasten them to the hand in any way, as this will affect blood flow and alter the readings progressively. When the needle assumes a steady reading the exercise can begin.

This exercise consists of learning how to will the meter needle to move. It is really a lesson in how to turn one's thoughts inwards to achieve a change in body state. This may be quite difficult for someone whose attention are normally extraverted, or turned outwards, upon the physical world. It then becomes an exploration of the uncharted territory of the mind and the powers of imagination, somewhat similar to Hatha Yoga.

The exercise can be learned in steps, if necessary. The first step would be to actually do something with your body that produces a change in meter readings. For instance, grip the electrodes tightly and then relax. Then take a deep breath and exhale rapidly. Contract the leg muscles repeatedly. When you see how meter needle movements can be produced in this way, then it is time to do the same thing by imagination. If imagining any of the foregoing acts does not produce results, then one has to go on to more exciting occurrences.

The easiest thing is to will the meter needle to move to the right. This corresponds to a fall in body resistance and a higher state of arousal. By going through moments in your past when you were highly aroused it is easy to come upon some circumstance, which works well. Everyone has some kind of fetish.

The next task is to make the meter needle move to the left. This is equivalent to a rise in body resistance. This task is a little harder because, for most people, a state of tension is as natural as breathing. Relaxation is more of an art than a skill. With a little practice the skill can be mastered and reflected in the meter readings. The art comes later, usually linked to fundamental changes in attitude and viewpoint.

First try physical relaxation, by going from the toes to the top of the head, relaxing all the muscle groups on the way, one by one. You will be amazed to find how tense you were. Then imagine carefree situations, those when nothing seemed to worry you and you were free to let go of cares.

In most conventional biofeedback workshops the GSR meter measurement is mainly used to get the subject to relax by watching their body resistance rise. They use 'meditation' music and 'Guided Imagery' Mantras, intoned in a soothing fashion. If you have the tape you can try this. Having mastered the separate abilities of producing rises and falls of the Meter readings it is next necessary to increase the amplitude of the swings and at the same time combine them, so that there is a rapid change from one state to another. This ability to change rapidly from one mentally induced, physiological state to another is very valuable and will give superior results in the remainder of the exercises.

## **Second Procedure:**

Once you have gained the ability to move the meter needle from the centre zero point to the right or left at will in mode one, that is, once you can alter your overall body resistance from a mid-point of, typically 50,000 Ohms, to a low figure say of 20,000 Ohms, or a high point of 80,000 Ohms, you will then be in a position to exploit this skill in another way.

For this next exercise a higher level of sensitivity is required and the gain control should be turned up accordingly by one division, thus doubling the amplification of the instrument. The aim of this exercise is to yo-yo the meter needle back and forth as rapidly as possible. The amplitude of the swing need not be great, corresponding to a resistance change from 45,000 to 55,000 Ohms. To do this quickly requires the direct exercise of will power, coupled with allotting a code number, or letter, to two of the imagery constructs which you used in the previous exercise and which gave the largest swings in either direction. Call them, for example, '1' and '2', or 'A' and 'B'. Make sure you have their identities firmly fixed in your memory and then alternate the codes as rapidly as you can.

Try not to sub-vocalize the code, so as to increase the speed of alternation. With practice, the mere intent to produce movement of the meter needle will suffice.

This exercise shows how intentions can be 'Zip coded', so that reactions are produced with much greater speed than a normal action of the will. Three swings a second is a good level to aim at, but swings of up to five times a second can be attained.

Such rapidity of change obviously cannot relate to any emotional arousal, like anger. Few people would claim to be on such a short fuse. Still less, would they be able to calm themselves at such a rate after being aroused. This is therefore a direct proof of the correlation of skin resistance with mere mental activity.

If you experience difficulty in getting the required swings, place a number of objects on the table before you. The trick is to learn how to switch your visual attention and mental appraisal of these objects quickly from one to the other. For example you may have a page of a document, a pair of scissors, a flowerpot, or cup. First, fix in your mind the qualities of these objects, such as circularity, utility, straightness, flatness, depth, and colour. Next assign a rank order to such qualities, so that you switch your attention between the objects in a given order. This is necessary in order to involve the logical perception of the left-brain hemisphere. As your attention is shifted rapidly between these objects there will thus be a moment when recourse is made to the logical sequence in choosing the next object

At first the change of body resistance consequent upon the shift of attention is very small, one or two hundred Ohms, observed as a small kick of the meter needle. With training, and by being aware of the aim of the result through the biofeedback indication, this can be increased to several thousand Ohms.

The advantage of such training is that the change of attention becomes much more clear-cut when the resistance swing reaches several thousand Ohms, as registered on the BPG Meter. The switch of attention from one object to another is much sharper and this means that the brain is being used more economically and precisely. In addition, the logical sequence, coupled with visual appraisal, will produce swings of activity between the left and right brain hemispheres, help to provoke information transfer and allow processing to take place in the brain hemisphere best adapted for that purpose.

Any range of objects can serve for this purpose, even when one is not connected to a BPG Meter. Watching the buildings, fields and notices flash by from a bus or train serves as a useful exercise. Even in the doctor's waiting room one can practice oscillating attention rapidly from table to chairs and windows.

For optimum mental functioning the state of arousal of the cortex should be high when focusing on an object, image or idea and low (high resistance) when making the switch.

To assist in this exercise there is an auxiliary device, which can be plugged into the output socket of the BPG Meter. This is a Tacho meter with a scale calibrated in frequency of changes, so that the number of swings of the meter, from one to ten a second can be read. It will also be described later to measure other types of activity.

A second auxiliary device consists of an audio tone generator, which can alternatively be coupled to the output socket, so that a change in swing frequency can be detected by the changes in pitch of the tone produced in the loudspeaker of the device.

These and other auxiliary devices will be dealt with in more detail later.

### **Third Procedure:**

This consists of mastering the rudiments of the psychoanalytic methods, which are used for the purpose of clearing up a patient's emotional problems. The sensitivity of the BPG Meter must again be increased by a factor of two, moving up to the next range for this purpose. To be successful this type of analysis requires the assistance of another person. For the vast majority of people self-directed analysis is seldom successful. It is the interaction with another type of personality that supplies the vital, emotional involvement, amplifying the readings. A word spoken to us by someone else has a much greater effect than one we mutter to ourselves.

The recommended method is based on the Jungian system using word lists. If a word on one of these lists causes a response on the BPG Meter this indicates it has an emotional charge. These emotionally charged words are the ones you should be concerned with. One should try to follow them up pursuing various synonyms and obvious associations. In the course of a reverie when one is considering such words, emotional incidents will spring to mind and in the process of going over and re-living such incidents their emotional 'charge' will diminish.

One is not attempting here to psychoanalyze a person completely. This may not be wise nor desirable, since one starts from the presumption that the person is normal and stable. The purpose of this exercise is merely to release emotional charge from a few key words in order to facilitate progress towards the more advanced techniques of biofeedback.

The choice of words for this list is a matter of great significance. There is little value in the analysis of obscure words, because they will figure little in biofeedback or in everyday life. The best results can be achieved by choosing words from the following list:

Amount; Art; Be (all forms and tenses); Beautiful; Belief; Cause; Certain; Chance; Change; Clear; Common; Comparison; Condition; Connection; Copy; Decision; Degree; Development; Different; Do (all forms); Education; End; Event; Example; Existence; Experience; Fact; Fear; Feeling, Fiction; Force; Form; Full; General; Get; Give; Good; Government; Happy; Have; History; Idea; Important; Interest; Jealousy; Knowledge; Law; Less; Lot; Level; Living; Love; Make; Material; Measure; Mind; Motion; Name; Nation; Natural; Necessary; Normal; Number; Observation; Opposite; Order; Organization; Part; Place; Pleasure; Possible; Power; Probable; Property; Purpose; Quantity; Quality; Question; Reason; Relation; Representative; Respect; Responsible; Right; Same; Say; Science; See; Seem; Sense; Sign; Simple; Society; Sort; Special; Substance; Thing Thought; True; Use; Way; Will; Wise; Word; Work; Yet.

If you use this list the majority of people will get readings with a significant percentage of the words. There is a sound reason for choosing these words:

1. They cover the ideas we are bound to use; those ideas, which are concerned in all that we do as thinking beings.

2. They are also words we are forced to use in explaining other words. That is, the ideas they cover in general terms embrace the particular meanings of a wide range of, other words, and will have links to them, which will evoke associations. Because these words, or the ideas contained in them, form such a large part of our internal verbal matrix, the removal of negative emotional charge from these few words will have a significant effect on our cognitive development. As much as the removal of emotional charge from all the other words in the English Dictionary!

This initial practice with the BPG Meter in Mode 1 is essential, because later on a similar procedure is to be used with the BPG Meter in Mode 2, that is, the Bilateral, or differential Mode.

### **Conclusion:**

By mastering those three techniques with the BPG Meter in Mode 1, measuring the overall psychogalvanic response, the way is now open to move on to the advanced techniques of differential analysis in Mode 2. These preliminary exercises will have allowed us to proceed with ease and certainty.

A final warning on the word list in Procedure Three. If difficulty is experienced in analyzing a person's reactions to a particular word, check the dictionary to make sure he understands the correct meaning. Or check all the words before you begin, if you suspect this may be a problem!

### **Arousal and Learning Ability:**

A high level of arousal is usually directly related to learning ability, that is, learning a new instrumental response as distinct from learning by rote. Conversely a low level of cortical arousal is within certain limits best for the do mode of consciousness. At a low level of arousal the encoding process, which consists of evocation in the memory of motor output (See Figure 3), is facilitated, as this evocation can proceed without awareness of the mechanics involved. This is imitative 'learning by doing'.

Within wide limits the above remarks apply to the learning process. However, it is possible to be at too high or too low a level of arousal to be able to function well at any task. One of the functions of the analysis of psychogalvanic response is that, after undertaking such analysis, one can function at a higher level of cortical arousal before experiencing the concomitant symptoms of anxiety and deterioration of reasoning faculties.

An awareness of our arousal level is of crucial importance when one comes to use the BPG Meter in Mode 2.

To achieve the optimum mental performance within a particular task framework we do need a particular level of general arousal dependent on whether the task involves input or output. We also require a measure of selective arousal dependent on whether the task is spatial or verbal.

The ability to switch arousal level rapidly is now seen in its proper perspective when one realizes that few tasks are purely perceptual or motor or holistic or linear. Although a task may be predominantly in one of these dimensions it will contain elements of the other three, with all the dimensions in flux, so the most efficient brain is one that can be an ever-changing matrix, moving rapidly from perception and reflection to action and correlation, with both intellect and intuition working hand in hand.

There is thus no ideal 'high state of consciousness', i.e. low arousal may better suit right hemisphere activity, or vice versa. There will be no state appropriate to any task, which can be truly indicated by a fixed reading on any meter. The meter can only point you in the right direction and show you where to look. So, therefore, the only ideal state is the ability to shift rapidly from A, the appropriate mental state in task context Y, to the next appropriate state B in the context of task Z. The 'highest' state is the appropriate state for the task. In a similar intuitive manner the student of Rajah Yoga is taught to switch attention rapidly between various centres of the body.

Having gained some familiarity with the BPG Meter in Mode I and realized the potential it has for training the mind to exercise a measure of control over the readings, one can then apply this ability to our inner state and arouse oneself to a degree appropriate to any task, whether it be one with a left hemisphere component or the converse.

The foregoing procedure of word analysis also forms part of the stock in trade for use of the BPG Meter in Mode 2, that is, differentially. This is because selected classes of words appear to affect the two hemispheres of the brain in different ways. Due to this difference in response, it is possible to augment one's capacity for switching between brain hemispheres and removes the disabilities consequent upon dominance of a single brain hemisphere.

#### **Procedure Four**

In the case of the average subject, the difference in response between the two hemispheres of the brain, as reflected in terms of changes in the ratio of electrical resistance of each palm, is very much smaller than the overall change in body resistance, corresponding to the physiological arousal state. Consequently a high sensitivity meter is essential to monitor the phenomenon. As one attains greater expertise in the management of the biofeedback loop the sensitivity can be reduced. The trained subject eventually reaches a state where he can maintain a steady general level of response whilst making a larger differential response of several hundred Ohms.

To commence the exercise switch the BPG Meter to Mode 2 on a high sensitivity range. Hold electrode A in the left hand and electrode B in the right. Now relax for a few minutes. In order to change the state of arousal differently in each hemisphere it is first necessary to be at a low level of general arousal. Too high a level will reinforce the hemispheric state you are already in.

As you are going to try to influence the meter needle by intention rather than merely record a change concomitant upon some hemispheric task, this preliminary relaxation period is especially important.

Unless you are significantly right or left right or left hemispherically biased the task you are performing will tend to act as a trigger to energize the appropriate side of the brain. Nevertheless, in some people this does not always occur, because of extreme dominance of one particular lobe of the brain the wrong kind of response will be elicited. When this happens the BPG Meter can record the fact and demonstrate to the subject the need for self-correction.

In the context of this exercise, the low level of arousal must be maintained in order to provide the necessary reference level by which differential action in the two hemispheres can be detected. The state of arousal should be as low as possible without impairing one's awareness. In this condition hemispheric dominance is reduced or even eliminated. This fact can be easily demonstrated when people who have intractable problems during their waking moments find that the solution occurs to them after having slept on the matter. The grip of the dominant hemisphere is

relaxed during sleep and the part of the brain best suited to the problem can deal with it. There is a subjective feeling of well being, even euphoria, after having solved a problem in this way, which indicates that sharing tasks properly between both halves of the brain will produce a happier as well as a better balanced personality.

It is also a further aim of the training, that the subject who attains hemispheric balance should be able to maintain higher states of arousal in both hemispheres, while remaining free from tension and still experiencing a subjective state of well being. Emotional tension of itself may arise from imbalance of the states of arousal in the brain hemispheres, producing lack of synchronicity in brainwave rhythms. The happy and balanced individual is thus capable of undertaking tasks involving great stress without experiencing any discomfort or nervousness.

After this necessary period of relaxation therefore, if the BPG Meter stays balanced and settled, and the electrodes have reached body temperature, you will then find that every mental or perceptual act will cause a deflection of the meter needle from the zero point.

In the case of eighty percent of the population this movement will be to the right more often than the left. This is because we live in a left-brain hemisphere culture in which right-handedness is the norm. The response can therefore be described as culturally determined. The approach to self-control in Mode 2 is slightly changed and a little more complex than of overall psychogalvanic measurement in Mode 1. The physiological changes that affect the first procedure, With the BPG Meter in Mode-I, mean that the movements of the needle are somewhat sluggish, but in Mode 2 on higher sensitivity the needle is continuously and vigorously on the move. This activity stems from the continuous mental thought pattern. An idea may stimulate one side of the brain spatially and then the logical/verbal part communication will pass to the other hemisphere. Before commencing any routine therefore a few minutes must be spent in practicing the mental exercise of holding the needle still.

This exercise is not quite the same as holding the needle still in Mode 1. In Mode 1 the overall psychogalvanic response can be stabilized, but smaller and more rapid movements related to differential arousal of the hemisphere cannot be detected because of the arrangement of the electrical circuit. Holding the needle still in the differential condition of Mode 2 has a definite subjective effect. Mental fidgeting ceases the mind is also stilled. One will have attained something not unlike the Zen state of consciousness, and the BPG Meter will demonstrate to you the fact that you have achieved this state, reinforcing the drive towards expansion of consciousness. This pseudo 'Zen' state is the one appropriate for the next stage of action.

The word 'action' is used in relation to mental activity in this case because elementary exercises in biofeedback are actions; they are an encoding process, the output of which is the meter reading.

A special Tachometer, or activity meter, as mentioned in the 2nd Procedure of Mode I, was originally available as an auxiliary device for the BPG Meter to indicate the level of mental activity. This was designed for use as an on-line, real time measurement of mental capacity, however it is also valuable in giving a null indication of Zen-like states. The device has now been superseded by analogue to digital conversion of data followed by computer analysis, as further described in the Chapters on the human energy field.

### **Procedure 5:**

Having succeeded in the exercise of holding the needle still, the next action is to move the needle to the left or to the right by an act of will. It will be found easy to move it to the right, as already mentioned, if you are right-handed. The hard task,

unless you are left-handed and biased towards the right brain hemisphere, is moving the needle to the left. The exercises are written in general for the majority of people, however the BPG Meter will quickly tell you if you are one of the minorities because of the contrary needle movement. In the case of extreme hemispheric dominance, the reading of the Balance control, which measures this ratio, will indicate the difference in state of arousal of the two brain hemispheres.

Attention should first be given to trying to move the needle in the direction which proves most difficult, and for most people this will consist of imagining shapes and locations, or whole scenes from memory. This activity must of course be interspersed with activity appropriate to the other hemisphere, such as mental arithmetic or inner speech, in order that swings across the zero point are demonstrated. It is important here to guard against possible errors in interpretation of readings. Because there are repeated swings in one direction, one may have shifted the zero point to give the illusion of a bilateral swing and therefore be led to believe that one is capable of moving easily to left or right. As a test of this one must return at times to the stilled consciousness of the Zen state, to check the zero reading and start again with the willing of movement in the difficult direction.

This may prove a difficult and tedious exercise but mental control cannot be achieved unless one is capable of determining the movement of the needle and freeing it to move in either direction with a positive amplitude from a stable zero point. Having achieved this, the next procedure follows without much additional practice.

### **Procedure 6:**

This is associated with the idea of 'warming to the task' in colloquial speech. The process of moving to a new task is followed by another period of mental adaptation to a state of harmony with that task. For instance, when one undertakes the task of writing one gradually warms up to the physical and mental operations it requires, the various centres concerned are aroused and have to achieve a new condition of balance. Writing contains elements of processes that involve the right hemisphere of the brain. These are the operational aspects of forming the various characters and the visual interpretation of the characters once they are written. Then there is the linear aspect of the verbal flow requiring verbal memory retrieval from the left hemisphere.

For the purpose of the BPG Meter measurement in Mode 2 the act of writing is not possible as both hands are holding electrodes and any muscular movement will affect the zero point of the needle. The processes involved in reading from a book will however serve just as well to demonstrate the bilateral involvement of the brain which should produce a small fluctuation about the zero mark at around 2-3 swings a second, this is caused by differential shifts of arousal in the two hemispheres as attention moves from linear to holistic aspects of the task and back again. This frequency of movement is a good interpretation of the complex nature of the task and the continual flux of arousal states that accompanies the activity. The swings of the BPG Meter at a frequency of 2-3 times a second occur with a person of average mental capacity. This switching frequency is determined partially by the demands of the task, i.e. the reading speed, and partially by the limitations of the visual perceptual system. Other factors are the relative speeds of dealing with inputs to the respective hemispheres and subsequently the rate at which these two inputs can be integrated to present a complete summation of the activity in the mind. Other researches which we have carried out in conjunction with stroboscopes and an instrument called a synchophone, which monitor inputs to the visual and auditory centers of the brain, suggest that the central nervous system can operate at

least two or three times as fast as the rate at which the sensory apparatus can deliver and interpret its signals. Strategies can be developed which overcome the inherent delays of the sensory apparatus by a sequential coding of input, which staggers the refractory periods of different groups of nerve fibers. This mimics the arrangement in the human ear, where various receptor nerves fire in volleys.

Increased writing and reading speeds can thus be realized by a process of physiological adaptation which are dealt with at length in the book on the Synchrophone.

The next exercise should not seek to use any task, such as reading, as a trigger. This is because with many people the triggering of natural tasks is likely to produce maladaptive responses. It is as well therefore to try to practice by intention alone and seek in this way to move the needle at a frequency of one swing a second, this is a reasonable goal for the first session.

Using the BPG Meter at very high sensitivities you will find you can begin to oscillate the needle by intention alone at as much as four swings a second. If you succeed this time then you will find that when you return to using a given task as a trigger, the rate of oscillation of the needle will be double that of a naive subject and there will be a related improvement in task performance.

### **Procedure 7:**

This describes analytic techniques of a higher order that can be undertaken with a BPG Meter in Mode 2. The cultural norm of Left-brain hemisphere dominance is reinforced by words and this is revealed by the way in which words of special classes effect the selective arousal of the two brain hemispheres of the subject. The most important class of word in this context is that dealing with the description of systems and processes, words such as: Conditioning; Cybernetics; Networks; Analysis; Scaling; Zoning; etc. These words, although abstract and superficially requiring left hemisphere activity, cannot be used with insight without the inter related co-operation of the right hemisphere, because they have adjuncts of space and motion.

Many people have difficulty with such words, and since difficult things reinforce difficulty this leads to a state of invalidation, the brain simply shuts down in this area and says 'too difficult' to itself.

This syndrome frequently appears as a result of classroom type instruction. The initial procedure of word analysis is in some ways similar to that of the BPG Meter in Mode I and the assistance of a second person is even more necessary since both hands are occupied holding electrodes and complete physical and emotional relaxation is a pre-requisite.

As before, look for the words that produce large readings and follow them through with free association in the reverie state. It is helpful for this purpose to use Roget's Thesaurus to provide lists of synonyms and antonyms. Once a word has been stripped of negative emotion, it is possible to proceed to the next exercise. This exercise consists of responding to the key word with an associated word, at the same time resisting the movement of the BPG Meter to the right.

Correlated with the class of systems and process words mentioned above are the simple words involving position and place, such as: Left; Right; Up; Down; Backwards; Forwards; In; Out; Above; Below. Another class of simple words is those pertaining to touch, feeling, balance and motion. Both these classes should involve the right -hemisphere of the brain and should be looked at in a similar manner. If there is an emotive suppression of words in these latter two classes it is a clear indication that the right hemisphere has been shut down. A useful additional

source of systems words is 'Word Power' by Edward de Bono. This book contains a list of 270 of the most vital of these words.

There is a very simple test to measure the progress a person has made in both systems of analysis. A list of one hundred words is prepared of the class to be tested. On hearing a word the subject must respond with another word that has a logical relationship. The words are read out one by one by a collaborator who gives the next word immediately the subject makes a response. A record can then be taken of the word responses on tape, if required for subsequent analysis.

One hundred words of the type used in Mode 1 analysis with the BPG takes 1.2 seconds per association, so two minutes will suffice for the whole list. With the type of words used in Mode 2, differential analysis of a list of 100 words will take about 3 minutes. After several sessions with these words, to free them from emotional charge, the time for the Mode I list will reduce to about 70 seconds, and for the more complex words in Mode 2 the reaction time will fall to about 1 second per word or 100 seconds for the whole list. The two techniques can nearly double the rate of association, in the case of the words that have been analysed.

The differential technique of Mode 2 is capable of being used for remedial purposes in connection with the special vocabularies of a trade or profession. By analyzing BPG Meter readings occurring with such words, in the case of persons in those professions, and following up the associations to release their charge, it is then possible, with practice, to increase association speed. This increase of association speed then leads to increased mental capacity. This is reflected in increased fluency and ability to recall facts with greater ease and speed. Insight into logical sequences and accuracy in manipulation of data is also increased.

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## **CORRECTING MALADAPTIVE RESPONSE WITH THE BPG METER**

Once you have attained a measure of freedom in controlling the responses registered by the BPG Meter in both Modes, through all the possible dimensions of measurement related in previous procedures it is then possible to concentrate on using the meter for the correction of various forms of malfunction of the cognitive processes.

In order to obtain the best results, two persons need to work in co operative endeavor towards this end. Neither need be an expert nor have any more than average education. It is sufficient for them to be able to follow the simple instructions given in this book. The roles of the collaborators should easily be interchangeable, one person being the subject connected to the meter and the other making adjustments to the controls and supervising the exercises alternately. The BPG Meter in fact supplies the hypersensitivity normally found in one's Guru.

If you are forced to use the meter by yourself one solution is to use foot electrodes. They would be fastened to the upper surface of a wooden sandal and have equal area compared with the hand electrodes. The weight of the foot resting on the contact surfaces should be sufficient to enable consistent readings to be attained, and as the feet can be more easily relaxed there will be less chance of noise artifacts, resulting from movement. However, this does not obviate the need for a preliminary relaxation period before the start of a session.

To check upon the state of relaxation wait until the overall body resistance, as indicated on the Balance scale in Mode I of the meter, has risen to between 8 and 9. Although changes in arousal state can be detected in Mode 2 as a tremor of the needle the direction of change is not indicated and the tremor confuses other indications. So a stable state is necessary in order that the swings of the needle can be correctly attributed to the alternation of the brain hemisphere arousal that arises as a result of most tasks.

To recapitulate briefly, the left hemisphere of the brain is specialized for language and serial, or logical processing. The right hemisphere is equipped better for spatial and pictorial tasks. It gives a complete overview of the situation without regard to detail.

Most common tasks will involve both of these specialized functions. Listening to music, for example, requires some serial processing, appropriate to the left hemisphere, in order to be aware of the development of a theme, and some holistic conception of the mood and phrasing of the piece. A good example of holistic perception of music is in the recognition of the same tune when played in different arrangements and different keys, or with different instruments or by players having different degrees of skill.

The point of issue however, is that, although both hemispheres must share in a perception and interpretation activity, they do not share equally. The malfunction of learned dominance often leads to excessive activity in one of the hemispheres.

As already remarked, reading and writing involve both sides of the brain. Words and letters have spatial qualities for which the right hemisphere is specialized. The same words and letters have to be strung together sequentially to define meaning and this serial processing involves the language functions of the left hemisphere. Therefore for the purpose of fluent reading and writing the two hemispheres must co-ordinate their functions in intricate, high-speed, linked programs. Consider the following tasks:

### **a. Sounding out a written or spoken word.**

Broken down into its elements this comprises the following steps:

Step	Hemisphere
1 Selection of a set of letters	Right
2 Find their sounds	Left
3 Articulate the sounds	Left
4 Hold the sounds in short-term memory	Left
5 Test for word finished	Right
6 Integrate the sounds in short-term memory	Left
7 Test 'do I recognize the word?'	Left

### **b. Writing down a word:**

Step	Hemisphere
1 Choose a word	Left
2 Hold the overall sound in mind	Left
3 Select a sound component	Left
4 Find a letter pattern in semantic memory	Right
5 Write the letters	Left
(for motor action)	Right
(for configuration of the letters)	Right
6 Test 'do I recognize the letter pattern?'	Right
7 Test word finished	Right

These programs show crudely the idea of how we switch from left to right sides of the brain during the task, and consequently how the state of arousal goes from high to low as the switching takes place from input to output. The speed at which the switching can be accommodated is the chief factor in maintaining an accurate flow and the subject must not be distracted from his task by the random intrusion of arbitrary associations. Ideally there should be a programmed sequence of trade-offs between the two hemispheres that leads to a co-ordinated strategy for sharing of task requirements.

When one speaks of a learned malfunction in relation to the activities of the two brain hemispheres there are three common, and one uncommon dimensions to take into account. Although these four dimensions do not exhaust all the possibilities in the field of learned malfunction they do cover nine tenths of them, insofar as the two hemispheres of the brain are concerned and excluding any organic or genetic malfunctions. There are other malfunctions that can result from incorrect sharing of functions between the higher and lower parts of the cortex i.e. those which are affected by the techniques of classical and post operant conditioning. These latter cases will be touched on when dealing with the use of the BPG Meter in the hand-foot Mode.

### **Procedure 8:**

A problem may exist in moving information from one side of the brain to the other and in specific tasks this problem may be exaggerated. Frequently the incipient causal factor is some very minor brain damage that occurred early in life. Subsequently through reinforcement of the minor impediment and general inertia, a mode of helplessness has been learned.

There are analogies one can use from other domains of physiological adaptation. The lazy eye becomes blind because the individual gives up looking through it. Those with partial hearing learn to be deaf. A pointer to the genesis of

the learned neural adaptation is that the performance of the task in question will deteriorate rapidly with the onset of fatigue.

In tackling this first dimension of the disability the BPG Meter is used coercively. If you are working alone the meter should be used with an auxiliary auditory output. This is a voltage controlled, variable frequency tone generator. The tone will fall if the meter needle moves to the left and rise if it moves in the opposite direction, so a change in tone will indicate whether or not the correct hemisphere of the brain is being aroused.

I have already described the sort of tasks appropriate to each brain hemisphere. If performance of a given task for one hemisphere tends to bring on a feeling of tiredness and disinclination to continue then this is a clear indication of the existence of a malfunction. The feeling of tiredness will be accompanied by a general fall in arousal, which will lead to a deterioration in overall performance and perhaps a swing of the needle in the wrong direction.

The feeling of tiredness must be combated first by retracing one's steps to make a fresh assault on the problem. This is analogous to a field athlete making a fresh run-up to his jump in order to gain the necessary momentum for a giant effort. Go back to Mode I on the BPG Meter, stabilize the needle as prescribed in Procedure I, then reassert your ability to move it in Procedure 2, then still the mind in Mode 2 as described in Procedure 4, while concentrating on the single thought of the task ahead. This run-up will give you sufficient confidence and momentum to correct the response of the dominant hemisphere and school it into subservience to your will. Success in this exercise will bring an added bonus in that information transfer between both halves of the brain through a band of nerve fibers called the Corpus Callosum will be speeded up. Not only will this increase the speed with which the task can be handled but it will also improve the balance in usage of the two hemispheres. The aim is to push up the relative meter swings, or the resistance change on switching to an arousal state of either side of the brain. Such enhanced change in arousal will facilitate the growth of fresh neural pathways, reactivating the joined brain cells and bypassing the areas where lesions have occurred.

### **Procedure 9:**

Here again we will deal with a specific problem related to one of the brain hemispheres. For example, a deficiency of response by the right hemisphere can lead to an inability to perform arithmetical calculations. The right hemisphere may, as part of such a task, be required to line up a column of digits. If this particular ability is not forthcoming, the arithmetical calculation cannot proceed. The low level of mental arithmetical capacity in our present culture may well result from an over emphasis of left hemisphere processes. This phenomenon is especially marked in women who are not encouraged to acquire manual/spatial skills in childhood. In such cases the introspective ramifications of language command the attention of the subject and maintain an active suppression of the right hemisphere. This means that a complete program for certain linear/spatial processes does not exist in working memory. This can be described clinically as 'the overt clumsiness of the ambisinistrous' (both hands are left hands). -

People with considerable capacity for mental arithmetic and related problems, such as handling chemical formulae, tend towards ambidexterity. This suggests a high level of bilateral diffusion of specialization and lack of unilateral hemispheric dominance. If the problem with arithmetic exists then the coercive technique of Procedure 8 must again be used in conjunction with tasks involving calculation. Switching between hemispheres during such tasks must be monitored to the point where the subject will feel it all becomes too difficult. At this critical fatigue failure

point take a fresh run-up to break the dominance of the inappropriate hemisphere. A sluggish hemisphere is often coupled with a lazy eye and curing this one deficiency will go a long way to treating the other condition. Eventually with the coercive technique the dormant half of the brain will be prodded into activity.

### **Procedure 10:**

The third dimension of hemispheric imbalance is not so common as the previous two, but it is often found among the left-handed. Sometimes this left-handedness can be traced to neural lesion but this need not stand in the way of the biofeedback technique being applied as a possible remedy. Although the left-handed person is usually more developed in the right side of the brain it can happen that they follow the cultural pattern in most respects and overall control resides in the left hemisphere.

This raises the problem of where the master program resides. When hemispheric switching occurs during a task where does the signal to switch come from? In most cognitive functions probably the larger part of the program is essentially verbal so the site of storage would be the left hemisphere. The comparative involvement of the frontal lobes of the brain in relation to the motor cortex can also confuse the issue and this is something that will be dealt with in the Chapter on the hand-foot Mode.

With the broad indication from bilateral monitoring of the palmar resistance in Mode 2 we cannot say exactly what each hemisphere is doing, however we can say which one is active as a general rule, with the exception of this particular dimension where the readings may be ambiguous owing to the uncertainty which exists in regard to overall control. This uncertainty tends to produce a state of anxiety in the dormant hemisphere when carrying out the left-handed tasks. The control information has to be re-routed from one side of the brain to the other resulting in clumsiness. The condition may also manifest itself in the auditory areas. The person suffering from it may have problems in understanding messages on the telephone when the receiver is placed against the right ear. The confusion of control may also cause malfunctions with the dominant left hemisphere.

Bearing the above in mind it can be seen that the run-up to Procedure 4 is particularly important. The state of anxiety in the dormant hemisphere must be calmed, by stilling the mind. If it has been found that attempts to arouse the left hemisphere have failed, then the technique must be reversed to find which favors the better performance of the task.

### **Procedure 11:**

This last, rare dimension of the learned malfunction is limited to people who, when mentally stable, have an IQ greater than 150. Both hemispheres of the brain have verbal centres. In a person of average development the verbal centre of the right hemisphere has an IQ of about 60, so it is of little significance. If a person does have an IQ of 150 this means that the speech component associated with this IQ must be over 100. This can be a problem if the person has a dominant right hemisphere and its speech center is called on to manifest a degree of intelligence beyond its rated capacity. Environment can play a major role in this case. If the subject comes from a deprived, working class background, although of high intelligence, his or her learned malfunction will be accentuated and prove a barrier to any commensurate achievement.

This class of subject can be detected because his or her speed IQ will be in excess of 150 but his verbal IQ is seldom over 100. He or she may be fluent, but he or she will have a high error rate in speech tasks. Often he or she will stutter or

squint, and slang words take the place of adjectives. The condition can be treated with the BPG Meter in Mode 2 by reinforcing the arousal of the left hemisphere in conjunction with a powerful coercive regime (a la Pygmalion).

Pressure of time and practical considerations may however necessitate other types of treatment with the Syncbrophone or Stroboscope. The operation of these devices is described in the book on Alternative Audition. However it was emphasized at the beginning that mental stability was a pre-requisite for this procedure. If there is any hint that the high IQ person involved may be bordering on Schizophrenia, as is sometimes the case, then the advice of a qualified psychiatrist should be sought before embarking on the treatment, which should be carried out by a skilled operator in a laboratory fully equipped with remedial apparatus.

It should be noted that people with this problem often scan lines of print from right to left. With a column of newsprint, which may be only five words wide, he will have no problem. With lines of ten or more words there will be reading difficulties and a line of fifteen words will be beyond the capacity of the subject altogether because he cannot hold this much information in his short-term memory and then reassemble it in its proper sequence. This is one of the surest tests for this condition.

## DIAGNOSTIC TESTS:

Our researches suggest that certain simple tasks are entirely grabbed by one hemisphere or the other. Although the hemisphere that grabs the task should be the one to which it is appropriate, there is a malfunction when this is not the case. Although the selection of a purely one-hemisphere task is something of a problem, those in the following list are predominantly either left or right-brained and they may be used with the meter for diagnostic purposes. They can also be used for correcting a malfunction. The procedure is to use these simple tasks as building blocks to assemble more complex tasks all relating to one hemisphere thus serving to push the selected task in that direction.

Modality	Type of Stimulus Material	Hemisphere
Ears	Digits, Words, Letters, Symbols as spoken	Left
Ears	Music, Environmental sounds	Right
Eyes	Words, Letters, Digits, as seen	Left.
Eyes	Colors, Forms (provided they are hard to name) Dot Patterns (similar)	Right
Hands	Letters written and Forms that are easy to name	Left
Hands	Abstract Forms, hard to name.	Right

### Mental Speed:

This was referred to in Procedure 11. An approximate test of mental speed is for the subject to recite a well-rehearsed poem of known length as rapidly as possible using inner speech. The average speed, for a guide, is 300 words per minute and the IQ relationship is given by the following formula:

$$\frac{(\text{Actual Speed})-0.5}{17.32} \times 100$$

For example if the recorded speed of inner speech is 500 w.p.m. then

$$\frac{(500)-0.5}{17.32} \times 100 = 128 \text{ is the IQ indicated}$$

This is only a rough guide so the scores should be rounded off to the nearest five points, so 200 w.p.m. inner speech = IQ of 80; 300 w.p.m. = IQ 100; 400w.p.m = IQ 115; 500w.p.m = IQ 130; 600w.p.m. = IQ 140, etc.

### Conclusion

We have been speaking about the right hand, right eye and ear being 'connected' to the left side of the brain as though there were hard wired electrical circuits going from these organs to centres in the brain, this is not really the case, the situation is far more complex. Nerve fibers from the eye divide in the optic chiasma, half going to each of the visual areas of left and right hemispheres. The same thing happens with the auditory circuits. But there is no kind of hard wiring in the higher centres of the brain, no one can guarantee that a given signal will produce a certain response, it all depends upon the level of attention that the brain bestows upon the information. If the brain decides to disregard the information and nerves related to a hand, a leg or an eye that organ becomes effectively paralyzed.

So when we use the word 'connected' it implies that the right hand, the right eye and the right ear are more likely to command attention from the opposed left hemisphere of the brain. Nevertheless perhaps one in a hundred thousand of the

population do not have this type of crossover. These people are usually mental defectives with severe disabilities and the techniques described in this book would have no relevance for them.

The division of nerve pathways is an evolutionary factor likely to increase the chances of survival in the case of brain damage. It has lead fortuitously to a situation of hemispheric dominance in civilized societies where people do in as a rule go around clouting each other with clubs, but at the same time it has created the opportunity for humanity vastly to increase its overall mental power by using the spare brain capacity Nature has lavished upon us.

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## THE BPG METER IN THE HAND-FOOT MODE

The use of the BPG Meter in this Mode is still the subject of research therefore the statements contained in this Chapter cannot be as categorical as those of the earlier procedures.

Broadly speaking there are two ways to use the Meter in the hand-foot mode:

1. A set of foot electrodes is placed under each foot. This will enable bilateral readings to be taken while the subject performs tasks with his hands, partly logical and partly spatial, designed to produce information transfer between the brain hemispheres. These bilateral readings will be colored by changes in the lower brain centres (See diagram on Page Ö. ), which diminish their amplitude. This is because the motor and sensory areas related to the hands are located on the outer part of the sensori-motor region of the brain while the feet are controlled from points closer to the central core of the older parts of the brain, the Limbic Lobe. A set of electrodes is connected to one hand and another set to one foot on the same side of the body. With the BPG Meter in Mode 2 difference reading will indicate a variation of the state of arousal within one hemisphere of the brain.

2. The sets of electrodes are placed in a diagonal relationship, i.e. left hand and right foot, or vice versa. Again using Mode 2 on the meter it is possible to obtain a differential reading related to the relative state of arousal of the higher centers in the forebrain in comparison with the lower centers of the Limbic lobe.

Until we have made many more parallel studies in a wide range of situations with the Electroencephalograph the above conclusions are necessarily speculative to a degree yet they do offer a simple means of diagnosing malfunction in the respective areas of cognition.

Some aspects of this further research will involve having a four electrode input to the modified BPG Meter.

On the question of selective arousal of the forebrain we are in a position to express some opinions. Though the forebrain is referred to as an association area, perhaps concerned with very complex, logical tasks we feel that it may experience a relative projection forwards from the motor areas in the hand and speech regions as an adjunct to the memorization process, so that memory to a certain extent is enshrined in a record of motor action at the particular time and also sensation.

The mid-brain is the dedicated projection area for the whole sensory-motor apparatus of the body and consequently is stimulus bound. Its level of arousal is thus critically related to body activity. A subject with a low level of arousal in the forebrain, where it becomes a silent area as regards electrical activity, will tend to be of an extraverted type of personality, very active physically, but his behavior will follow more primitive and instinctual lines. He will respond closely to an externally imposed stimulus discipline. The extreme example of this type is the lobotomized psychiatric patient who becomes very pliable and co-operative as a result of the operation. He is also a prisoner of present time, since the vital element in memorization is the ability to imprint sensory-motor images on the forebrain has been lost. This inability to relate past experience to the present, and lack of foresight into their future, deprives the individual of any motivation beyond simple and instinctual needs. Governed by impulse he cannot experience any detachment from events and has little choice outside of programmed inhibitions, over his pattern of response. This is coupled with euphoria and a willingness to accept any experience, good or bad, rather than no experience at all. This sad condition of the lobotomized gives a much insight into the function of the frontal lobes of the brain.

These frontal lobes can be seen to have less specialization than other parts of the brain. One centre can take over if another is damaged. They act in a holistic

manner as a center of intention and seem to motivate and program the mid-brain from within. To do this they often override the extrinsic, stimulus bound reactions of the mid-brain. They have the ability to judge, and this in itself argues that a response must be held in escrow. The forebrain can act as a center of unlearning, either releasing us from inhibitions or even erasing programmes of instrumental response no longer relevant to our present time and situation. It can therefore be safely asserted that the forebrain is concerned with master program of activity and the sequencing of those programs.

There thus seems to be a threefold purpose in seeking to arouse the two lobes of the forebrain:

1. It will assist us to reprogram our existing knowledge in a more useful arrangement and allow us to make a new set of adaptations.

2. It will release us from fixed modes of perception and action, improve our judgment and encourage lateral thinking on broader issues in relation to all kinds of problems.

3. It can focus attention on specific areas of the body and thus reduce perceptual thresholds in those areas, thus enabling intricate tasks to be undertaken with less difficulty.

There may also be projections of the forebrain beyond the fissure of Rolando that enable it to influence the visual area of the cortex in the same way. By focusing attention on the occipital lobe the persistence of vision could be altered. This means that one would be able to see events that are happening at a faster rate than is possible, in technical terms. The flicker fusion rate of 20 Hertz, which sets a limit on the detailed perception by the human eye of moving images, could thus be exceeded. This would allow shorter units of time to be experienced in a kind of Kung-Fu state of consciousness.

The combined effect of these factors allows us both to construct and comprehend abstract systems, many stages removed from concrete external reality and to use these structures as a global plan for programming, perception and action. Here we have a kind of system that allows our sum total of experience to be inter-related as a holistic balancing, all pervasive modality.

Nevertheless some tasks are performed most effectively in absence of forebrain interference. These are routine, repetitive jobs, involving speed and co-ordination in motor output. Work on a variety of assembly lines follows such a pattern. Here the higher mind switches off and thinks about something else. Juggling, for example would require in the initial stages of learning the active participation of the forebrain, but subsequently the higher faculties would tend to interfere with the acquisition of the final stages of complete automaticity.

With the foot input, modified BPG Meter we hope to show that that relative psychogalvanic resistance of both feet on Input A compared with both hands on Input B will give an unequivocal measurement of forebrain arousal by a movement of the meter needle to the right. While a fall in arousal, will produce movement in the opposite direction.

There is a partial correlation between the arousal of the forebrain and the general level of activity of the whole brain. Also as a general rule perceptual input processes predominate over related output encoding activities. What it is hoped we can achieve is to train subjects to increase the arousal of their forebrain differentially against background of lowered general brain activity. This represents something like the Zen state of *satori*, in which the person become capable of unusually rapid and intricate body movements. It is the *satori* of action, or Kung-Fu state of consciousness.

In the hand-foot mode the chance of spurious readings is increased, because of the high level of sensitivity required. The importance of the preliminary period of relaxation and practice with the various drills Procedures 1-11 must be emphasized and should always precede attempts to stimulate the forebrain. Once the preliminaries have been accomplished it will be useful to demonstrate how words and mantras can act as triggers to increase and decrease the arousal level. Such triggers must necessarily be processed through their associations to remove any emotional charge concerned with the lower centres of the brain. It is also necessary to eliminate command words, which have a direct effect on the motor consciousness of the mid-brain.

There is a rare form of adaptive schizophrenia among those persons of high IQ which can be recognized by using the differential hand-foot technique of the BPG Meter and against which suitable remedial drills can be contrived to combat. With a child of very high IQ (that is 170 and above) the forebrain may not come into operation at the appropriate age, that is, between 6 and 10 years. This is because forebrain adapts to the needs of the environment and a superior quality of brain, which has much greater speed and flexibility than the average, will find it does not need to stretch itself in order to stay comfortably in the running. What may happen therefore is that part of the mid-brain will be able to act in place of the whole forebrain because the child is taxed so far below his potential capacity.

The environmental conditioning, which emphasizes containment within the average herd, coupled with a political belief in complete egalitarianism and the abolition of the Elite, will produce in the gifted child a condition in which the forebrain goes to sleep. This condition has been recognized and is described by philosophical writers like P.D. Ouspensky. In his terms, the forebrain is under the control of a caretaker 'I', a secondary personality without contact with the real world, who stumbles around disturbing the furniture in the darkness and creates peculiar hallucinations.

Many people evolve naturally to a state where there is the ability to shut off the forebrain in this manner, by an act of will, in order to be able to experience a kind of non-ordinary reality, or mystical state. But this is the state the adaptive schizophrenic is stuck in.

A clue to this condition is that the patient is capable of a high rate of reflective sensori-motor learning. He will have the ability to learn to play a musical instrument at least to a limited degree by observation alone. One case in our personal experience is that of someone learning to play the piano in half an hour and a report of someone passing their driving test after only a few hours tuition the same morning. Infant prodigies and cases of calculating prodigies able to perform long arithmetic sums in their head fall into the same category. Such powers have a price. Verbal IQ may be as low as 100, but motor-motor and mathematical IQ can be as high as 200. Furthermore the state will worsen if the subject is writing with the wrong hand. When the left hemisphere of the mid-brain is acting the role of the forebrain it has little extra capacity, so dyslexia may be an added complication. The state of arousal of the left midbrain may be high, but the caretaker in the forebrain may also produce high arousal by internal activity.

Further symptoms will be a reduced capacity to handle abstract concepts although there will be a high degree of motivation. There will be hints, too, of the introverted activity that is going on. The BPG Meter in this case would be used in the Hand-Foot Mode to seek to arouse the forebrain (if it is not already so) by a careful selection of tasks involving abstract ideas. If the subject is free from physical lesions the forebrain will strive to integrate higher functions and operate correctly.

It will however also be necessary to lower the arousal of the motor- motor mid-brain, and some form of sensory deprivation can only achieve this, i.e. special conditions, which reduce visual, auditory and sensory stimulation. It would therefore be necessary to have the full service of a specially constructed laboratory in order to obtain any kind of remission from this condition.

If as a result of environmental conditioning consciousness becomes confined in limited areas of one lobe of the brain, which as a consequence remains in a high state of arousal, this can lead to a state of hormonal imbalance throughout the body. Many of the persons so affected tend to be homosexual as a consequence.

The greatest percentage of people with a sideways imbalance of functional control in the brain is to be found in professions associated with the theatre. It could therefore be argued that this environmental type of malfunction fulfills a need for society. To cure such a person completely, that is, to reallocate tasks to other parts of the brain, might even make them no longer competent as performers. So do not attempt to use mind development methods on them unless they are aware of the consequences.

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## PART TWO

### DETECTING THE HUMAN ENERGY FIELD

The second part of this book is concerned with developments that have taken place in connection with the use of Psychogalvanometers since the first publication of Part One. These developments came about following the publication of Valerie Hunt's work in 1976, which described how various sound frequencies could be picked up from electrodes connected to the skin for the purpose of measuring the electrical pulses responsible for muscle movement, which is called electromyography

Over the past twenty years Valerie Hunt, a physical therapist and Professor of Kinesiology at U.C.L.A. California, developed a method of detecting experimentally a range of frequencies present in the human body. She came to believe that these frequencies constitute an energy field, or something, which has been described in occult literature as the human aura. This is also called the 'etheric body', something that sensitives see as colours surrounding the human body, which give an indication of their state of health or their various characteristics. The etheric body is supposed to maintain the human physical form.

Medical science has shown that all living creatures maintain electro-chemical processes in their bodies - human beings more so, because of their brain activity, which sends complicated signal pulses along the nerve fibers.

Doctors routinely use Electroencephalographs (EEG's) to detect electrical signals in the brain, Electrocardiographs (EKG's) to record the electrical activity of the heart and Electromyography (EMG's) to measure the electrical activity of the muscles. Although Valerie Hunt's work involved the study of human muscle movement she became interested in the possibility that there might be another kind of energy field surrounding the body, which was capable of influencing it. She was led to this conclusion after studying the EMG's of a dancer, who claimed that she was using this outer energy field to help her complete the movements.

Valerie then expanded her research to include people who claimed to be able to see the human energy field, or aura, although this caused a lot of raised eyebrows among her academic colleagues. The vital point, which her research made, was that something non-physical, like the human aura, could influence electromagnetic activity in the human body and vice-versa. This was the vital link between body and soul, which had occupied the minds of all philosophers since the time of Plato.

It should be explained that electrical activity in the human body consists of ionic pulses that travel along the nerve fibers. The pulses activate the muscles and the strength of the reaction depends upon the frequency at which the pulses are passed. The highest pulse frequency in the motor nerves leading to the muscles is around 250 per second. Sharp pulses like this have higher frequency components, which follow a distinct pattern as determined by what is called 'Fourier Analysis'. Valerie Hunt was therefore able to filter out the muscle signal frequencies and their higher frequency components, and after doing this was left with smaller signals in the frequency range between 100 and 1600 cps that did not seem to emanate from the heart, muscles or brain. These signals seemed, in fact, to come from centres in the body called Chakras, as defined in ancient Hindu teachings.

Normally, high-frequency EM waves are damped out by the human body, that consists of 90% water. Low frequency EM waves can however, be passed, even through water. Though they would not be attenuated so much if there existed in the body a system of energy lines coining from acupuncture points (the existence of which orthodox science questions), or they could pass around the body as a 'skin effect', insulated from the internal body structures by the high resistance of dead skin cells.

The sensitivity of this 'skin effect' or acupuncture system is remarkable and tests need to be carried out to determine whether it exists in dead bodies as well as living ones. Kirlian photographs would suggest this is perhaps not the case.

Pursuing her line of research Valerie managed to associate particular patterns of these subtler frequencies with particular colors in the human aura as seen by various sensitives. Her Summary of Auric Frequencies and Corresponding Colours are shown below. It has a close correspondence with similar charts that one finds in occult books relating to the human aura, but in this case the frequencies at least were determined by empirical measurement.

#### RELATIONSHIP OF HUMAN ENERGY FIELD FREQUENCIES TO COLOURS OF THE AURA AND THE CHAKRAS

<b>Colour</b>	<b>Approx. Central Frequency</b>	<b>Chakra</b>
Dark Blue (Muscle Signals)	200 Hz	Base
Green	300 Hz	Sacral
Yellow	400 Hz	Spleen
Red	500 Hz	Stomach
Orange	600 Hz	Throat
Light Blue	700 Hz	Brow
Violet	800 Hz	Crown
Cream	1,000 Hz	Astral
White	1,100 Hz	Logical Mind
Golden	1,400 Hz	Mind

One of her most important discoveries was that certain talents or abilities in individuals could be related to specific frequencies recorded at this subtle level between 100 and 1600 Hz For instance, in materialistically minded people the frequencies fell in the lower range below 250 Hz People with healing abilities had frequencies between 400 and 800 Hz. Persons with 'psychic' ability, who can channel information from non-physical sources, seemed to operate in a narrow band from 800 to 900 Hz Those with frequencies above 900 are what she calls 'mystical personalities', those who are able to act upon the information they get from psychic sources.

The question is whether such frequencies were being picked up from the EM environment in which we are constantly bathed. This question will be dealt with at length in succeeding paragraphs.

We have been doing research in the allied field of measuring changes in skin resistance in relation to mental arousal. In the early stages of this research we were aware of the existence of 'noise 'artifacts', as has already been mentioned, when these resistance changes were amplified for the purpose of measurement. It should be noted that noise is always created in relation to amplification of signals, especially when these signals are comparatively weak. So we paid no special attention to the artifacts and took steps to reduce higher frequencies above those we expected from

the electro-chemical changes in the body resulting from thought process, the cut-off being about 30 Hz.

New technology has enabled the output from skin resistance measurement devices to be fed into computers via an analogue to digital converter, which gives a faithful representation of the resistance variations, just like an oscilloscope. In addition it allows one to derive an Averaged Frequency Spectrum of all the signals involved. A few years ago instruments that were capable of doing this cost thousands of pounds.

When one looked at the normal oscilloscope display of resistance variations of the human body we were presented with something that looked like the usual 'Noise' we had expected. But when one changed the presentation to that of an Averaged Frequency Spectrum, one immediately became aware of certain sharp peaks in frequency, which occurred at particular points and did not look like noise, which would have had a random distribution. Moreover, these peaks seemed to correspond with those referred to in Valerie Hunt's work. This is odd, because if these peaks resulted from something picked up from the computer by the body's aerial system, why did they correspond to what Valerie Hunt had found in her tests and why did they vary from person to person?

It seems therefore, that we now have another avenue for exploring the effects of the human energy field that is easier, cheaper and quite accurate. This can be measured through variations of body resistance. A word of warning though, it turns out that the human energy field is very sensitive to movement and the environment. When someone moves the frequencies go all over the place due to muscle potentials,, which are much greater. Similarly a neon strip light nearby will cancel all the psychic peaks of the frequency spectrum in the range 0-2,000Hz and produces some immense peaks at 2,400 Hz. It is interesting to note that after a few minutes the body manages to adapt to such large inputs and the interference frequency peaks decrease. If the body did not have this capability of adapting to the large EM fields we are continually exposed to then we would all be in bad shape!

One has to be very calm and composed to get worthwhile results. Unlike the former exhortations in the first part of this book, that required the subject to get in a calm frame of mind, one can now see the effects of emotional arousal in the energy field, which tend to wipe out the higher energy peaks. Likewise one needs to carefully screen the input leads to avoid pick-up of mains frequency or other electrical interference.

It is more than likely that further detailed research could provide a system that would give instant personality profiles for aptitude assessment and many other purposes, merely by a comparison of the frequency peaks found in the human energy field.

The apparatus required is any 486 or better computer equipped with an A/D input attachment, which is analyzed by a DOS program requiring about 1.5 Megabytes. A further program has now been written in Windows 95. The authors can provide details of the converter and program, also of a Galvanic Skin Resistance Meter suitable for these experiments.

## VORTICES AND CHAOS THEORY

In her book Valerie Hunt goes on to suggest that there is a relationship between the vortices of the human energy field and Chaos theory. There is a certain point at which the energies cease to flow smoothly and become chaotic, as though one can become emotionally charged to the point where rage and hysteria supervene. When this happens the vortex is orientated to what is called an 'Attractor' some motive or powerful objective becomes the central point of one's intention and all other things are forgotten, one loses all thought of the consequences of one's actions. Such powerful intentions can be seen as sharp peaks in the energy field.

Strangely enough this can be expressed in terms of the behavior of chaotic systems. The different frequencies of rotation of the vortices of the successive Chakras from Crown to Base follow a pattern of 'period doubling', as reflected in the frequency spectrum and the colors in the aura. The wiping out of the peaks in the energy field spectrum can be seen as one becomes more aroused, while a calmer state of mind produces rounded peaks, presumably reflecting a more balanced area of interest and ability.

This energy field business now begins to look very complicated and some of the factors that have been discovered are listed below:

- The field changes in different locations;
- It varies according to the time of day;
- It pretty well closes down at night;
- It varies according to which way you are facing;
- People standing near you affect your field;
- Your state of health is reflected in the height of low frequency peaks, less than 250 Hz.;
- Strange, high- frequency peaks, not usually seen in your spectrum, can either be caused by strip lighting, or perhaps some non-physical cause, about which one can only speculate.

Here we must endeavour to explain the possible reason for the dramatic alteration in the human energy field. Resulting from location and orientation. The cause could largely magnetic and related to the Solar Wind, since one is recording an electromagnetic event. The late Charles Brooker, former Chief Engineer at the B.B.C. did some important research into these magnetic effects as they affected human physiology. His books were ignored by the scientific establishment and never published. Excerpts of his most important discoveries follow and it will be seen how they relate to the subject of the human energy field.

There is also the suspicion that the electromagnetic fluctuations of the aura may simply be an effect derived from a different kind of ether energy having a much greater potency. The analogy would be that of immensely powerful waves in the ocean that cause light to be reflected from them at different angles, but the energy of the deflected light is a minute fraction of the energy of the wave in the sea.

## **EXPERIMENTS BY THE SCIENTIFIC & MEDICAL NETWORK SUB-GROUP AT BISLEY**

Most of the early tests of the Human Energy Field were carried out at a research facility provided by Audrey Edwards at her home in Bisley. Members of the SMN Sub-Group met there regularly to discuss developments and test different ideas.

Back in the hut on 23rd September, 1998, we did experiments with the place completely blacked out using the doubly - polarized light from the lamp made up to the design of Bob Cripps in Stornoway, Isle of Lewis, Scotland. Some of us did see streamers of 'light' between fingers, but unfortunately no colors. One does need a 'sensitive' for this kind of experiment. There is evidence however, that the aura can be detected by irradiation with this doubly polarized light in a completely darkened room, as claimed by Bob Cripps. This effect arises from the polarization of light that occurs when it passes through crystals and other media subject to electric potentials.

All this points to the possibility that 'empty space' we call it has a structure. That aether itself contains shapes, which transmit energy in such a way that it determines what occurs at the physical level. Such a hypothesis would flout the principles of Special Relativity, which denied the existence of the aether.

## FURTHER NOTES ON RESEARCH

A friend borrowed a GSR meter and did some tests at home on himself and with his wife. He rang me a couple of days later and said the peaks were all due to electrical interference of various kinds, AC mains radiation, and various frequencies from his computer and other electric apparatus in the house. One of his key assertions was that the peak frequencies for his wife and himself were the same. It was pointed out that this was to be expected, since they had lived together for a long time and his own records of brain waves showed that people in love shared the same frequencies. This did not influence him to change his mind, which rather depressed us.

However, the fact that neon strip lighting did not produce frequency peaks, as one might have expected, but cancelled the whole frequency spectrum regardless, seems to go counter to this friend's contention about the effects of interference. It is also noticeable that subjects' frequencies vary from day to day, when there is no change in ambient EM conditions. Other people being tested with our computer show different peaks from one person to another, in the high frequency range, which do not change when they distance themselves from the computer, but are actually enhanced.

Another argument against the 'ambient fields' explanation of these energy peaks in the averaged spectrum is that the Bilateral meter tests the frequencies from each hand separately and then adds them together in the circuit, so that the overall readings of body resistance cancel each other out, as has already been explained. One is left only with the variations between the hands, or opposed hemispheres of the brain. In like manner, any ambient fields, that would affect both hands equally, are also cancelled, leaving the energy field variations between the hands. This can be demonstrated if one attempts to use just one set of electrodes, in one hand, as one would do in Mode I. The energy field readings then vanish. This shows conclusively that this energy field is something that affects the body bilaterally, from side to side, and is not an overall body reaction.

Another evening while one subject was being tested, a new cluster of peaks appeared in their spectrum very much larger than their usual ones. It was at 1400 Hz. The feeling was that some other energy was present, perhaps belonging to a discarnate source. Can the auras of spirits produce such an effect on one's GSR? If someone tries holding their hand behind the heads of people when they were being tested, their own distinctive peaks begin to surface on the readings of the subject under test. This would be a good means of finding out if anyone had healing ability, particularly in the 400-800 Hz range.

Another friend of mine, who does counseling for people in prison, was contacted to see if he would be interested in testing prisoners at H.M. Prison at Coldingley. Changes of frequency and the appearance of new high-frequency peaks might be an indication of the effectiveness of the remedial counseling and training the prisoners were receiving. The view was that our method needed much more trials. Where better to do the trials than on a 'captive' audience, who might be encouraged to learn that they had a spiritual aura as well as a gross, physical body?

Peter, on the other hand, who owns a Video Shop, seemed very enthusiastic and thought there may be a means of getting more test results, if people visiting his shop would want to stop a moment to have their aura taken.

On Tuesday 19th August 1997 Peter turned up with a crowd of his friends at the workshop in Bisley and we went through them looking at their energy fields. It was a very hot evening and the author was quite tired, but the results were most unpromising. On every trace of the averaged energy spectrum that was taken from

those present was registering this enormous peak around 300 Hz. Usually when each subject released the electrodes the trace collapsed to zero, likewise when we switched on the Neon strip light. But this was not happening. The trace remained there obstinately and only smaller peaks, including those that could be identified with various people imposed themselves on it when we were being tested. We searched around desperately for a source of interference. John had brought his tape recorder and was copying tapes, so this was ordered to be shut down, with no effect. All lights went out, but it made no difference. Excuses were made as best we could and the session ended.

Later, when the events of the evening were being considered, it was suspected that someone in that group had brought a powerful entity with them - something exerting very powerful drives at a low, sexual-type energy, which completely overrode anything anybody could produce. It should be added that a couple of the girls were scantily clad due to the heat. We began to be worried, because if entities as powerful as this were being attracted by the prospect of registering themselves, then we would really face some danger from their influence.

As a postscript to this incident, when Audrey opened the lab next morning a frog hopped out. There was no way it could have got in while the crowd of us were milling about the night before. I almost asked Audrey if she had tried kissing it. Was the frog some embodiment of Freudian symbolism? Audrey said it was trying to jump out of the windows, which were closed. When she showed it the door it gave her a knowing look and boldly hopped out.

The following morning, energy fields of people involved were tried again, just to reassure ourselves. We got some very reassuring peaks at 900 and 1800 Hz back to normal. We sighed with relief. Then we went back to Bisley to see if the energy of the entity was still there. It was surprising to find the energies quite different in the daytime in this location. There were new peaks at 600 and a huge one at 2100 Hz, more like a mountain. As subjects swiveled on the stool in front of the computer, the peaks were seen to change. They got bigger as one faced the East. Then they decreased when one turned back to the original position.

This energy field business was beginning to look very complicated and this confirmed the findings we had listed above.

We began to believe in the Chinese science of Feng Shui. We realized that we had in our hands a tool for working out exactly which time and position would produce the most advantageous operation of psychic energies. We saw why churches and places of worship were so precisely sited and orientated. This seemed to be the starting point for another avenue of research that we hope to take up in future.

When attending a lecture on Yoga at a weekend seminar, the speaker produced a diagram of the Chakras as seen from a side view. This is reproduced in the diagram on the next page. It will be seen that each Chakra consists of a vortex and that the five middle ones runs from front to back of the body. It will be apparent that, when a person is facing the source of Pranic energy, it passes directly into each of these Chakra vortices and is thus enhanced. The Crown and Base Chakras are in the vertical plane. The source of this Pranic energy is what I have presumed to be the Solar Wind (or aether wind), that whistles around the surface of the earth from East to West, at 400 mph at these latitudes, as the earth rotates relative to it, the aether being fixed in the direction of the Sun.

## TELEPATHY EXPERIMENTS

Continuing the tests at Audrey's hut on 2nd Sept 1997 Ken tried sending colours and other shapes to Peter and others. He has a quite strong personality that makes him a good communicator and new frequencies showed up when he was transmitting to others on the Meter. We have to do more tests to establish if the imagined colours correspond fully with the auric colour frequencies in the chart above.

A new visitor to our group had suffered a recent bereavement. Though she seemed apparently to have recovered from her loss, the energy field showed rapidly changing waves across the width of the spectrum, rather than fixed peaks. The energy field was also very responsive to the proximity of others, as though their sympathy was palpable.

Another friend was just out of hospital having had a prostate operation when he was tested at his home in Devon. The third of his four energy peaks was very much lower than the rest. This had been noted before when someone else was tested, who also had prostate trouble. It seemed as though the third of the energy peaks in this region below 250 Hz. corresponded to the Sacral Chakra and the sex organs, just as Valerie Hunt had indicated.

At this point, needing a break, I took myself off to a weekend retreat to listen to a series of talks on various subjects among which was one on visualization and meditation. The speaker mentioned that it was a good idea to meditate in the bath. With a sudden flash of insight I realized this would be the perfect way to ensure that the body was screened from all electrical interference, since water absorbs all electromagnetic waves very effectively. One must be careful, nevertheless, to make sure that there was no connection whatsoever with mains driven apparatus because of the risk of electrocution! This experiment would have to wait until I had acquired a battery-driven Laptop computer.

## **FURTHER RESEARCH WITH A BATTERY-DRIVEN LAPTOP COMPUTER**

Some weeks later, having acquired a Laptop computer, it was now able to carry out the critical test of seeing whether the energy field disappeared when the body was completely screened from random electromagnetic fields. The field generated by the laptop is insignificant, so it was only necessary to immerse oneself in the bath. Plots were taken before and during the bath, by placing a wooden shelf across the bath. The difference was that the immersion of the body in water caused all the low frequency peaks, due to muscle potentials, up to 250 Hz to disappear, as one might have expected. But the Chakra frequencies from 600 Hz upwards remained.

The Laptop computer, being highly portable, proved an excellent tool to eliminate objections on the grounds of stray fields from alternating current mains or the high voltage VDU screens. It could be tried out in many different locations, indoors and outdoors. In particular, when using it on a number of people at Hourne Farm, a New Age Seminar Centre in East Sussex, during a weekend study group on 18th October 1997 it was found here that there were four distinct peaks of energy in the low frequency region among those recorded, irrespective of location or direction. This confirmed the physiological aspect of these particular readings, as distinct from the emotional and mental aspects of higher frequencies.

A week or so later a lady friend asked to have an energy field reading on the meter and computer. At first she showed a healthy line of peaks, but when she started talking about problems she had experienced lately at work, the reading changed dramatically. All the peaks disappeared and were replaced with a flat trace of a purely static character. I was taken aback, it was as if she had pulled down a screen over her energy field. When I questioned her about this she told me how she had developed this ability to put a screen around herself and calm the emotions of the people around her, simply by not responding to their anger or fear. In my mind I had likened this to 'body armour', something people like policemen, soldiers, doctors and nurses have to develop in order to cope with continuous heavy trauma. Normal emotional reactions are completely suppressed. We remember the words of Shakespeare's Henry V before Harfleur - 'then lend to the eye a terrible aspect, let it pry through the portage of the head, let the brow o'erwhelm it'. This epitomizes the way people adapt to traumatic circumstances by an effort of will.

Patti's state was different, however. She was not brutalized by trauma, but instead had found a potent means to cool it. I next thought to look for what might be involved at higher frequencies up to 8kHz I there found four very high peaks from 2KHz, to 7 KHz. I had earlier formed the impression that peaks in this high frequency area represented spiritual entities - to have four of them was surely a bonus, coupled with her protective shield it made Patti almost invulnerable to any kind of verbal assault.

Further tests on a friend showed how vulnerable people can be to conditions like diabetes. On taking his energy field shortly after arrival, having driven along crowded roads for about fifty miles, the trace was remarkable for the lack of energy peaks of any kind. However, after a rest and some refreshment, the energy peaks came back quite strongly. This same person had strong peaks, which showed up, in the high frequency region. He was convinced that some kind of entity was attacking him and was not at all relieved to see some evidence of this.

## A THEOSOPHICAL INTERLUDE

After incidents like this one often can begin to believe in occult teachings about 'guardian angels', likewise in less desirable things like demonic possession. The high frequencies at which these entities operate undoubtedly gives them the power to override the psychic energy of a mere mortal, especially when one is multi-tasked by having to look after bodily and social needs.

Guardian angels can be rather coy. Some friends who were intrigued by the recorded energy fields insisted on having them taken again and again. After the second recording the peaks for the guardian entities disappeared. Either their energy was exhausted or they disliked being put on view. This does not apply to demonic possession.

In some cases, however, I have to emphasize the necessity for exorcism and we are indebted to Eugene Maurey, who proposes certain techniques in his book on Exorcism (1985).

He emphasizes that one should ALWAYS keep at a distance from the client, say six feet or more. The most likely candidates for spirit possession are inadequate individuals who have probably degenerated into layabouts, drug users, alcoholics or criminals. A total stranger is best for doing the exorcism.

Maurey's technique was to dowse for intruding spirits, using a pendulum and/or dowsing rods. The energy field detection system using a computer is a valuable adjunct for detection for those who lack dowsing skills. A good tip is that the exorcist needs to be rested, fed and watered, in warm and pleasant surroundings and emotionally undisturbed. The exorcist also needs to be equipped with their personal 'ring of protection', as mentioned in the case above. In the old days a pentacle was drawn on the floor and one had to keep inside it. Nowadays it suffices to adopt a mental image of a barrier around oneself. Maurey describes erecting a barrier of brilliant white light around himself. One need not be so dramatic, a heavy helmet and cloak, like that worn by Daarth Vader, would suffice.

It would also be advisable to determine whether in fact one had protecting entities around, as in the case of Patti above. Most people have them and later in life become very conscious of the protection they afford. If one knows the name they go under, they can be invoked. The guide can then act as an intermediary. It is inadvisable to contact invading spirits directly. I know it says in the New Testament that Jesus and his disciples did it, but you may not be in the same league as them!

However awful the invading spirit is, (and they are generally not nice or reasonable) they will probably have something, or another entity, which they can relate to and who can exert peer pressure on them. Your spirit guide has the task of finding this friend, relative or teacher that the invading entity can see, recognize and trust.

When this is done, it is up to the exorcist to initiate a dialogue through their spirit guide and the other mediating entity, in an effort to persuade the possessing spirit that they do not belong on this earth plane. Note here that 'guardian angels' can give warnings and avert dangers, but they cannot otherwise act without direction. Angels react but don't have volition. Their 'prime directive' is not to interfere.

Possessing entities are both stubborn and unreasonable, they may not enjoy the company of kindred spirits or go quietly. So it may become necessary to apply pressure. Here the visualization technique again comes in useful. Try to imagine the Ghostbusters technique of forcing the spirit into a container with a strong field around it and shutting the lid. If you haven't watched this series then the Arabian

Nights idea of the Genie trapped in a bottle will do, so long as you don't forget to put in the cork.

It requires psychic energy to create visualizations, so it cannot be kept up for long. It only needs to be long enough to persuade the entity that they would be better off leaving with their kindred spirit.

Nevertheless, they or others like them, will probably be back, once the person you are treating gets drunk, drugged or depressed again. So you may have to go through the whole ritual again. Habits are difficult to break, but if you persist, the person will eventually gain enough will power to build their own defenses.

## THE REIKI INITIATION

The author had the good fortune to be able to take a Reiki Initiation, staged over a weekend by Audrey Edwards at Bisley. There were six on the course and each was attuned four times. Fortunately a graph had been taken of my energy field just before the course. On the day afterwards another graph was taken and the change was astonishing. It seemed the whole energy field had shifted and there was an enormous peak in the Psychic region which was not there before, since I do not regard myself as a psychic person, nor a healer. I was tempted to believe that there is more to Reiki than has been supposed; it seems to produce a profound change in Chakra energisation. One could in fact be opened up to the reception of the Ki or Chi energy for the purpose of transmuting it, or acting as a channel for such energy as part of the process of healing. The Reiki teaching suggests that the initiation should be followed by a period of 21 days re-adjustment, during which signs of a detoxification process may be noted, as the Ki energy flows through the body and clears out the mess. One should drink plenty of water to assist this cleansing process.

My daughter came on the course with me and she, too, exhibited this strong, psychic peak afterwards at the same frequency, which I now accept as a characteristic marker of the Reiki attunement. The same test will be tried on others as the occasion arises. It will certainly distinguish genuine attunements from ineffectual ones.

## **ANIMAL ENERGY FIELDS**

The other day I went out to visit friends in Farnham. After taking their energy fields and having a general discussion the lady introduced her dog, Bentinck, and insisted that I try to record its energy field as well. It seemed a well-behaved hound and so I struggled to get a reading on the BPG Meter while she held its paws in each of the can electrodes.

When I had got a steady needle I captured the spectrum on the Laptop, which didn't look much different from a typical human, with peaks here and there. I suppose all mammals read more or less alike in varying degrees, but I admit this is a tough one for some religious people who don't admit that animals have any spiritual qualities.

Anyway I have a supporter in Murry Hope, in her book 'Paschats and the Crystal People', she writes: - 'There is many a cat, dog or horse that is an evolved spirit, much further up the ladder of spiritual evolution than a large percentage of your hominid Population'.

## THE EFFECT OF DRINK AND DRUGS

A friend called recently and asked for a reading of his energy field following a strange psychic experience he had had the same morning. He had been directed by an inner voice to Frimley, a place he had never been before. On arrival he went into the large pub at the corner of the High Street and there encountered an old woman who related her experience to him of seeing a UFO shaped like a bus, about eight years previously, which she had told no one about before. Being a UFO enthusiast he recalled a similar incident related to him by two RAF Officers at an aerodrome nearby. The incident unnerved him and he had a drink to steady his nerves. What the energy reading showed, I feel, was not the result of the psychic experience, but the effect of one pint of beer. His higher energies, obvious on a previous occasion, had been flattened. In their place the energies of the lower centers had been amplified. This is in contrast to the case where the higher energies were deliberately shut down by an act of will, in order to deal with a difficult situation in the physical world. It seems therefore, that drugs and alcohol will produce an involuntary shutdown of the higher faculties. One should not therefore partake in any form of chemical indulgence before an energy reading, otherwise a totally distorted graph results.

## **EXPERIMENTS IN AMERICA**

Measurements of the energy fields of many people were carried out across the United States during the summer of 1999, Arkansas, San Francisco and Los Angeles. One of the main purposes was to see if there were any changes in the lower end of the field frequencies as a result of the different mains voltage, 110 AC and the higher frequency of 60 Hz. It was found that there was no measurable difference in the energy field characteristics up to 250 Hz.

The energy field measurements were of particular interest to groups claiming to conduct therapies that increased human potential and power. One such group was called 'Access', with branches in various cities around the United States and in England.

## MUSIC, THE CHAKRAS AND THE ENERGY FIELD

Since Valerie Hunt's work puts the Chakra frequencies within the tonal range of music, I suppose one might see a link between the two. Perhaps one finds music uplifting because it keys in certain Chakra energies. Anyway I thought the matter worth further study, since I had now developed a practical means of pinpointing what these frequencies were. It came as some surprise to find, that in the earlier part of this century there were four tonal scales being used:

- For Physics one had a scale based on Middle C as 256 Hz;
- The English Concert Pitch used a Middle C of 273;
- The Society of Arts, Stuttgart used a Middle C of 264;
- The French Standard was a Middle C of 261.

The London International Conference of 1939 brought all these scales, except Physics, together by choosing Treble A to be 440 Hz. Middle C became about 264 Hz. This made it much easier for singers visiting different countries to sing in tune. The interval of the eleven-note scale then became the 12th root of 2 or 1.0595.

The lowest common factors of the Basic, Natural or Diatonic Scale were as follows, with the sharps fitting untidily between:

C	C#	D	D#	E	F	F#	G	G#	A	A#	B	C
24	(25.2)	27(28.28)	30	32	(33.6)	36	(37.7)	40	(42.4)	45	48	

The rationale of the new scale was to multiply this basic scale by 11, which was the number of the notes it contained. The interval may seem untidy, but it results in the following harmonies between the white notes on the keyboard:

C	D	E	F	G	A	B	C
8/9	9/10	15/16	8/9	9/10	8/9	15/16	8/9

The actual frequencies of the notes now in use are as follows:

C 261.6; C# 277.2; D 293.7; D# 311.1; E 329.6; F 349.2;  
F# 370; G 392; G# 415.3; A 440; A# 466.2; B 493.9; C 523.2.

Compare this with the Chakra Scale as described by Valerie Hunt:-

Base Chakra 200; Sacral Chakra 300; Spleen Chakra 400; Stomach Chakra 500, Heart/Thymus Chakra 600; Throat Chakra 700; Brow Chakra 800; Crown Chakra 1000.

This scale spans over two octaves. If one constructs a basic scale from the evidence of energy fields I have so far accrued it would look something like this, with harmonics below:

8	(9)	10	(11)	12	(14)	16	(18)	20	(22)	24	(28)	32
	4/5		5/6		3/4		4/5		5/6		3/4	

A much more tuneful scale. The highest harmonic of the Black notes is 11. The multiplier is obtained by squaring the last number, 32. The actual frequencies of the scale then are as follows:--

256; 288; 320; 352; 384; 448; 512; 576; 640; 704; 768; 896; 1024

This is fairly obviously a scale with scientific appeal, since it uses powers of 2. It takes into account the muscle frequencies at the lower end of the range, which finish around 250Hz and the thousand-petalled Lotus at the Crown Chakra, a thousand times as fast as a heartbeat. True it is only a six-note scale, but does one need the extra notes of the eleven-note scale, which don't really harmonize very well? It is reported that Debussy used a six-note scale for some of his music. Perhaps someone else would like to write some music in this scale so one could see what it sounds like. It might be quite therapeutic. The tones would leap about in a dramatic way, rising to piercing heights, quite unlike contemporary music. The separation of the notes would make singing to the lower octave much easier.

The idea of constructing a musical scale related to the Chakras is not new. In her book 'Sound Therapy' Olivea Dewhurst-Maddox (1993) lists a single octave of musical notes corresponding to the Chakras on Page 118. Most people, it seems, have a 'natural scale' of their own. Those who believe themselves 'tone deaf', or who have difficulty in singing, should be encouraged to sing notes that they can manage without difficulty. The singing teacher can then pick up the key, which they would be best able to sing in. Trying to sing in tune with a piano may be very difficult, when the keyboard contains so many compromises in frequency to accommodate a twelve-note scale. The guitar offers greater flexibility in keying, which may account for its popularity.

However, the two-octave scale I suggest, and the frequencies related to powers of two, is more in keeping with the fundamental sway of Yin and Yang, the constant interaction of energies in healthy existence. I did some tests of the effect of music on the energy field with two subjects, Simon and Kathy, as recorded in the Charts. It seemed to enhance the lower frequencies.

## GEOMETRY AND HARMONY

I am indebted to Malcolm Stewart and his article on the 'Seed of Harmony' in his magazine Syncrysta (1999) Page 5 Issue 1. Where he points out that harmonies on the existing twelve-note tonal scale can be arrived at by a variation of the ratios 3:4:5. This relates to the proportions of the right-angled triangle used by the ancients from prehistoric times, in all forms of mensuration. The squares of the two shorter sides when added, equal the square on the longer side, or hypotenuse. By equally spacing the notes around the circumference of a circle one arranges the proportion of the sectors in the ratios 3,4,5; 4,3,5; 5,3,4; 5,4,3; 3,5,4; 4,5,3. These combinations all produce major and minor chords that are pleasant to the human ear.

The Sector 3,4,5, combination, taking 'C' at the top of the circle, gives D#,G,C, for example, with frequencies of 311.1, 392, 261.6 in the ratio 4,5,3, the minor chord in C.

Supposing the circle covered two Octaves, as in the 'Chakra Scale', the 3,4,5 sector sequence would have frequencies of 352, 640 and 256, in the ratios 5,9,4, a big leap in the middle would make the sound quite extraordinary.

Malcolm also points out that the Mandelbrot Set, defining the chaotic outline between infinity and zero, may have some connection to our concept of harmony. In his illustration there are two logarithmic spirals converging towards each other at the base of the figure. The convergence factor for each revolution of the spiral, or the power of the root which must be found of the original diameter at each turn, may express something fundamental relating to harmony, or perhaps the nature of the Universe itself. A simple formula like  $z = z^2 + c$  (where 'c' is a complex number) creates a pattern by a collection of dots on the computer screen that gradually builds up into a beautiful pattern.

Pursuing the Chaos dynamics in relation to fluids, for our bodies are 95% water. D'Arcy Thompson (1961) had an intuition that there were deep seated rhythms of growth in living organisms which created universal forms. He believed that physical laws must explain and govern these forms. Behind the visible shapes of organisms must lie ghostly forms, serving as invisible templates. All these forms were in organized patterns of motion derived from fractal equations. Libchaber pursued such ideas in connection with the behavior of liquid Helium, which has a very low viscosity, so it will respond to the slightest pressure or temperature change, less than one thousandth of a degree in fact. He embedded microscopic temperature probes in the fluid and charted the intricate behavior of the turbulence that resulted from such slight heating of the Helium. The fluid organized itself into rolling cylinders. It was the spit of flow that Lorenz had modeled in his three famous equations. With more heating the first rolling cylinder was bifurcated, then instability sets in and a kink develops in each roll. The kink moves steadily back and forth, then new bifurcations developed, with erratic peaks and valleys. The spectrum diagram of such behavior begins to look like the frequencies that make up a complex chord played by a symphony orchestra. The frequency peaks rise up out of the fuzziness of the noise, very much like the energy spectrum I have plotted so many times and it poses the question whether our own energy system is derived from the chaotic body currents resulting from heating by the stomach. The frequency doubling that goes on results in new peaks at four, eight, sixteen times the basic tone, which is exactly how the Chakra frequencies appear to relate.

## **YOGA PRACTICES AND THE HUMAN ENERGY FIELD.**

A parallel study of the effects of meditation and Yoga techniques upon different centres of the body has been carried out by Hiroshi Motoyama (1981). Changes in the galvanic skin resistance of the body, heart rate, breathing rate and ECG were measured simultaneously in an electrically screened room, while the subjects were concentrating upon different centres in the body. His conclusions were that a form of Psi energy existed, which could be made to increase or decrease the normal activity of the various Chakra centers. The decrease in normal electrical activity as a consequence of mental attention was remarkable. It would seem that centers like the stomach and heart have a smooth, natural rhythm. Meditative practices should only seek to maintain such natural rhythms. If anything out of the normal is attempted, then digestive troubles and heart arrhythmia can result. Overuse and abuse of the heart chakra can lead to disease and death.

The author remembers well the case of a friend who rose early every morning to practice opening the charkas and who seemed in the best of health. He died suddenly of a heart attack while on the platform delivering a lecture.

Hiroshi also detected high frequency energy emissions in the region 10 KHz to 100 KHz something that is unaccountable by any physiological process. His findings tend to confirm that mental energies are of such a high order and frequency, that if they are directed downwards into the autonomic functions of the body, without due care, the results can be disastrous. If one is to effect healing of some particular body centre, then it is best that the healing frequency and energy is applied from outside. Given that the subject's frequency spectrum is available, then that exact frequency can be used to assist healing. If the frequency is off by even a small amount, then fibrillation and beat waves will be produced. This results in the parasympathetic reaction that has been observed by Hiroshi.

Our own research has found that Indians, whose cultural background is linked to Yoga practices, tend to react badly when attempts are made to measure their GSR. Their heightened Psi ability tends to make them go instantly into a defensive mode, rather like the case of Patti, mentioned previously. Skin resistance will become so high that measurements are not possible.

Reference. Hiroshi Motoyama - 1995 Theories of the Chakras. Quest Books, Wheaton Illinois.

# THE NATURAL RESONANT FREQUENCIES OF THE HUMAN BODY

The idea that the Chakras spanned two octaves of the musical scale and the chance remark about tone-deaf people being taught to sing by sounding their own preferred tones, leads on to the idea of measuring one's own tonal resonances and creating sounds suitable for oneself. One needs an accurate tone generator. This produces tones that are injected into the body as electrical waves through clip on electrodes. The resonances can then be measured in the usual way, using the averaged frequency spectrum of the body. The height of the various peaks of the injected tones will vary in response to the reaction of the body. Resonance would indicate the precise frequency of whatever Chakras are responding.

This is a similar method of treatment to that adopted by Earl De La Warr at Rayleigh Park, Oxford in the 1950's. No means then existed of precise measurement of the effects of such treatment, one simply judged efficacy by the amount of damping of the injected frequency that occurred. A histogram was produced which showed the relationship of the energy injected into a limb at a given frequency to the signal power on the opposite side of the limb. This was related to muscle tone as the criteria of good health. How sad that De La Warr was before his time and denied the means of proving his conjectures.

## CORRELATION TEST SHEET FOR ABILITIES vs. ENERGY FIELD PEAKS.

Subject's Identifier:

Age:                      Sex:                      Weight:  
Marital Status:                      Religion:

General Health:

Educational Background:

Career:

Hobbies:

Diet:                      Smoker\Non-Smoker

Sports\Exercise:

Alcohol Consumption:                      Drugs\Medication

Psychic Experiences:

(eg Out of Body Experiences, Clairvoyance, Clairaudience, Psychometry, etc)

Energy Field Readings:

Date:    /    /    Time                      hrs.                      Place:

(Exact location must be given, i.e if indoors, the house and room. If outdoors, a grid reference accurate to one metre)

Local Features, e.g. Power Lines, Phone lines, large buildings, with bearings:

Graph of Averaged Frequency Spectrum

dB

0

-10

-20

-30

-40

-50

-60

0

500Hz.

1000Hz

1500Hz

2000Hz

# AUXILIARY EQUIPMENT

## 1. The A.C. Electrode

This device is designed to provide increased accuracy in overall psychogalvanic resistance measurement.

Using the standard electrodes, a problem can occur due to the secretion of sweat from hands and feet. This is partially overcome by using a large area electrode. But it may still give rise to tiny noise 'artifacts' in the amplifier, thus leading to spurious readings. Within the normal range of usage such readings are insignificant but for special applications, requiring great accuracy, the AC Electrode is recommended.

The AC Electrode provides a rapid alteration of a small voltage (0.6 volts at 200 Hz). This ensures that any artifacts arising from skin contact are cancelled by an opposing voltage change. The resultant A.C. current is rectified and smoothed before passing into the BPG Meter in Mode 1. This method is not suitable for Mode 2. The circuit shown is of the early, electro-mechanical, switched type, to illustrate the principle. Solid-state electronic switches and oscillators would now be used.

## 2. Audio Tone Generation

In this device an audio tone is generated and an applied voltage obtained from the Output socket of the BPG meter varies this tone. When the meter needle registers zero, no voltage is provided at the Output. Movement to the left will give a negative voltage and a positive voltage results from movement to the right, this variation causes a corresponding lowered or raised tone frequency. This device can be used to monitor tasks involving reading, or for other reasons when the eyes have to be closed, to limit visual activity.

## 3. AC Coupled Auxiliary Meter

This device also plugs into the Output Jack Socket that is provided, in order to be operated from the voltage across the BPG meter output. The BPG meter in either mode is not designed to respond to changes, which occur faster than about five times a second. The operator could not accurately assess such rapid changes. For certain purposes however, it is necessary to know whether any rapid changes are taking place continuously as a measure of brain activity. The Auxiliary meter is designed to integrate rapid changes of psychogalvanic resistance and present them as a scalar reading, combined in terms of amplitude and frequency. The Auxiliary meter will be most useful for Procedure 4 in Mode 2 of the BPG meter. Assuming that the BPG meter needle has been balanced to a steady state and the consciousness stilled, the Auxiliary meter then provides a check on small, rapid movements, which would also have to be eliminated before the Zen state could be attained.

A rough schematic diagram of the original device is shown in Figure 6. With the advances that have occurred in computers, this form of analysis can now be undertaken by a special Windows program, after A/D conversion of the analogue signal. This procedure and the discoveries arising from it, will be described in the next Section.

If the BPG meter is used at high sensitivity in Mode 2 even ideas, intentions and every mental picture, irrespective of emotional charge, will give a change of reading. The inner flow of thought causes a frenzy of needle movements. The aim of Procedure 5 is to move attention rapidly and if the Auxiliary meter, or computer analysis, is used in conjunction with this and later procedures it can monitor the effectiveness of the exercises.

Used as a mental activity meter, these techniques can also measure quantitatively the progress a subject is making in the performance of mental tasks, such as inner speech, and therefore it serves as an index of mental capacity.

#### **4. Temperature Probes**

A set of probes can be provided with thermistor bulbs to be used with the BPG meter in Mode 2 for the purpose of monitoring differential changes in temperature of different centres of the brain and of parts of the body, that may occur as a result of focusing mental attention on different ideas or different organs. This is basically for the purpose of checking one's progress with certain Yogic exercises, but it is also a fascinating field of research for the enthusiast. The higher ranges of the BPG meter are especially suitable for this purpose of temperature monitoring.

The temperature probes used are quite tiny, being designed to follow relatively fast changes in body temperature over a range of perhaps one tenth of a degree Celsius. This may not sound exciting, but a considerable amount of heat energy would be involved if such a change took place in one second. It would indicate that the heat producing aspects of cell metabolism responded sympathetically to mental attention, as is taught in schools of Yoga. Such selective response in different parts of the body and specific centres of the brain, is quite distinct from the overall homeostasis maintained by the lower brain centres.

#### **References:**

Benzinger 'The Human Thermostat' -Sci American 204: 134-

# APPENDIX 1

## ESP Procedure

Having dealt with the rigorously clinical approach to psychogalvanic measurement of skin resistance throughout this book the author ought to be allowed one last suggestion in the field of extrasensory perception. This arises simply because the BPG Meter is such an ideal tool for testing claims about ESP and Yoga. It can show unequivocally whether any Yoga enthusiast is beginning to attain a degree of control of the autonomic processes of the body, which he aims to realize, long before such changes can manifest themselves as overt changes. Thus he is enabled to pursue the most fruitful type of exercise for his purpose.

This particular Procedure is intended as a test for psychic sensitives and can be undertaken at two levels - the instinctive and the emotional level.

Firstly in Mode 1, with the BPG Meter, one must get the subject in a relaxed state. In a nearby room and out of sight of the subject, a photographic likeness of him is then exposed to a series of bright strobe flashes of light. See if there is any correlation between the flashing and the arousal state of the subject.

Secondly in Mode 2, follow procedure 4 to obtain a still mind. Then in a neighbouring room stab a pin into either side of the photo and see whether any corresponding differential movement of the meter needle occurs.

If your results are positive try repeating the experiments at ever increasing distances between the subject and the photograph. You will soon be able to tell whether you have found a true sensitive and you will also have discovered a means of transmitting information telepathically. If too many people give positive results in this type of experiment, then the laws of physics will have to be re-written!

It is interesting to note that Cleve Backster, the C.I.A. Polygraph expert, (Secret Life of Plants), after discovering the effects of human intention on plants, went on to experiment with many other living organisms. He also developed a technique for keeping alive for eight hours, human lymphocytes, taken from the mouth. The lymphocytes were kept alive in vitro and wired up for recording in the laboratory, he was then able to keep track of the emotional states of the donors even when they were up to eight miles away. This further demonstrated the holographic potential of the aether field surrounding human body. It appears to be able to detect resonances between genetic material detached from the host at a considerable distance. These resonances however, are not frequency specific, as has already been pointed out, aetheric resonance relies on form. It is mimicked by odour carrying pheromones which have to fit into suitably shaped receptors in the nose, also in the case of synaptic junctions and many other biomolecular structures.

## References:

Soal & Bateman 'Experiments in Telepathy' Newhaven Conn. Yale Univ. Press 1954

## APPENDIX 2

### **Breathing Rates and their Effect on BPG Meter Readings.**

The initial instructions in Yoga techniques is concerned with the regulation of breathing rate. In later exercises the student of Yoga is taught to hold the breath for progressively longer periods as an aid to mental development.

As regards the effect of breathing upon the Readings of the BPG Meter, the intake of breath induces a rise in cortical arousal, i.e. a slight fall in psychogalvanic resistance. Exhalation induces a higher body resistance and a focus of concentration upon doing things in the external world. The breathing-in period may thus generally be connected with introversion and exhalation with extroversion.

It is therefore easier to monitor the flow of consciousness during inhalation, and this is also the most useful phase for learning new types of responses and correcting maladaptive conditioning. The exercises described in the text of this book can be most easily performed during the period of inhalation, which should be prolonged as long as necessary for this purpose, especially when using the meter on the high sensitivity ranges. The exhalation period should likewise be kept as short as can be managed as it increases the muscular output by 15% and therefore is a disturbing influence.

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