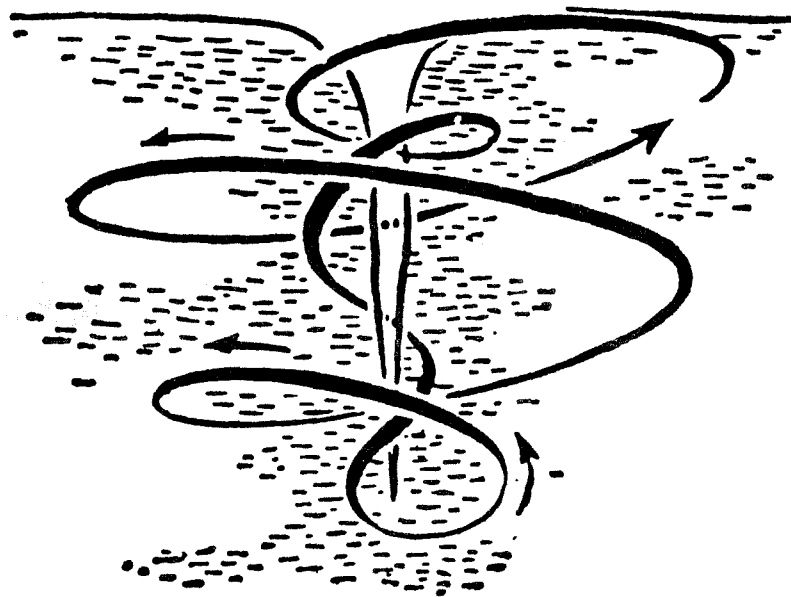


The Journal of Borderland Research

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WATER!

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EDITOR-IN-CHIEF

Thomas Joseph Brown

MANAGING EDITOR

Michael Brian Theroux

PRODUCTION ASSISTANT

Yerba Santa

CONTRIBUTORS THIS ISSUE

Jennifer Greene, Dr E. A. V. Prasad, Rhett Jacobson Baumgartner, Dorotheos C.E. Cody, D.D. (Hon.), Larry Spring, Harvey Martin, James T. Westwood.

Cover: From *Sensitive Chaos* by Theodor Schwenk

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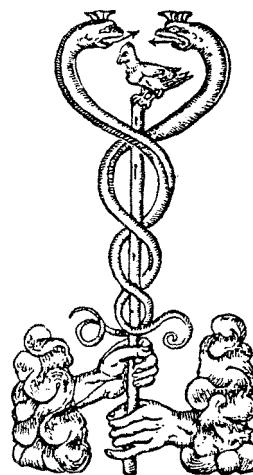
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WATER

SENSE ORGAN FOR THE LIFE OF THE EARTH

by Jennifer Greene

This article was edited by Jennifer Greene and Joel Morrow from a lecture given at the annual Biodynamic Conference, October 5, 1990, in Kimberton, Pennsylvania. It is reprinted with permission of the author from BIODYNAMICS, Spring 1991, Number 178, The journal of the Bio-Dynamic Association, P.O. Box 550, Kimberton, PA 19442

I would like to begin with an image that has been very powerful for my life and teaching. At one point in his quest Parsifal is given the Grail Sword.¹ By this time in his journey, he already has the Sword of the Red Knight, which can be used for combat. Then he is given the Sword of the Grail. Only later, however, is he told that it has special properties. He can use it once for combat, but the second time it will break. "If it breaks, Parsifal, you must find a stream in a forest, the headlands of a stream, put this sword in this stream behind a rock. And the sword will be annealed." When I taught this to high school students, I had one -- you always have them in the classroom, someone with a Mohawk teetering back in the chair -- and all of a sudden he burst out, "Well, what's the good of that sword anyway if you can't use it for fighting?" And I replied, "That's just the question! That's what he needs to discover!" So we'll keep that picture in mind and come back to it at the end.

The present condition of water is something that concerns every single one of us. For years we have known about the water pollution in cities. We now know that there are water problems in the most remote villages. We know, for example, that of the many great aquifers of Long Island the five upper ones are polluted. We know that in the Midwest a number of major aquifers are also polluted and in the far West where there is little water, the groundwaters are polluted. We know that the bottled water industry now runs into billions of dollars and that there is some question as to quality. There appears to be a good deal of sham. We are confronted in every quarter by a situation that requires our utmost attention.

We have gotten where we are because we have lost our sense of what water is -- its true nature, the forms and rhythms in its movement. And worse yet, we have lost the relationship of water to the formative capacities; those capacities which form the organic world.

What I have learned about water depends upon the work of one of the most outstanding researchers in this field, Theodore Schwenk,

the author of *Sensitive Chaos* (London: Rudolf Steiner Press, 1990). *Sensitive Chaos* was described by Jacques Cousteau as being the first treatise on the phenomenology of water. Anyone working in the field cites this book. Anyone wishing to follow this subject further should study it carefully.

Ninety-seven percent of the earth's water is in the sea. Two percent of the earth's water is deep frozen locked up in glaciers. One percent is for daily use. Of that one percent, ninety-eight percent is used for industry, two percent is used for nutrition. Those are rough proportions. The water that we use we must care for. It is nonrenewable.

Water is the most abundant liquid in the world. It is an inorganic substance that occurs everywhere. It is a scientific anomaly. It is denser as a liquid than it is as a solid. When water freezes, it floats, protecting the bottom waters of lakes, protecting the flowing water in streams beneath it. It is found naturally as a gas, as a liquid, as a solid. It continually reappears with many faces. As air, as mist, as steam, as dew that precipitates. We can see the rainbow and colors because of it.

The clouds -- we can think of them in our imagination, their varied forms and qualities -- appear on the more gaseous volatile end. On the more solid end we can think of snow (not a single snow crystal the same!) and ice, frost, icicles, glaciers, icebergs. And in between this gaseous and solid state, there is the rhythmic movement of the flowing water in streams, brooks, lakes and raindrops -- all flowing downward, pulled by earth's gravity to the ocean. Think for a moment about these great circulatory systems moving over the earth, not only the great currents in the oceans, such as the great Gulf Stream, but the great air masses, the jet streams as well, and think of those vast fields of evaporation and condensation.

Water is an element which occupies a position *between* the great polarities in the world. Water is a great *between* element. It occupies a position between life and death. No life can come into being without it. No life can be sustained without it. In its flowing it

occupies a place between gravity and levity. In rainbow and color phenomena it occupies a place between light and dark. Water mediates between bases and acids. It's the great dissolver in the world. In time, water can dissolve anything. It lies between stillness and movement, because its very nature and life is rhythm.

With this introduction I would like to take my readers on a journey, so they can see the forms that water has left behind, see the shapes in nature which make visible the very delicate surfaces and formative capacities of water. Normally you cannot see the incredible movements within water. Ways have to be found to make what water does visible. In fact only since human beings have gotten away from the earth for a while during space travel have they been able to look back and see the earth itself as a gigantic water drop. In the book *Home Planet* astronauts tried to find the words to describe what they felt -- the awe and the reverence -- when they looked back and saw this incredibly fragile, incredibly beautiful blue water drop, alone in the blackness of space.

A drop when it falls is absolutely amazing. If you were to put a grain of potassium permanganate inside a water drop, you would see the same kind of circulations that can be seen from afar on the earth. Great eddies, swirls, confluences, and separations of flow, all composed in layer upon layer. It's all layers. And when a drop falls, it breathes. Coming from the spout at first it's a bit tear shaped, then it flattens out, then it becomes tear shaped in the other direction, then it flattens out again and so on -- while within its surfaces unfold continuous streaming, eddying patterns of movement.

A drop of water is the nearest thing to a sphere that water can become on earth. In an incredible NASA film the astronauts were drinking orange juice from a plastic squeeze bottle. Then they squirted the juice out into the cabin, stopped squeezing, and the juice came back into the bottle! They did it again, because it was fun. Finally it flew all over the cabin. But then a wonderful thing occurred. The dispersed liquid began to coagulate -- drop by drop -- into an absolutely perfect sphere. No gravity. Then the astronauts began to blow the sphere of juice back and forth like a game of catch. And the film ends with these two fellows placing drinking straws into this orange sphere and making it disappear!

Water always wants to come back to a sphere, but on earth it can't. The most perfect form is the drop. When tugged at by gravity, water begins to flow, then tries to meander -- to join itself into a sphere once more, but it

can't. So it begins to meander down an incline. In the Alps glacial water melts in the morning. A wholly new situation with meanders begins. The glacial melt meanders down and at night it freezes. The next morning a new birthing of rivulets and meanders appears, until it goes down over the side in the precipice, into the valley below. In the sedate lowlands, however, the incline is not so great. A river will slow its pace into a very languid meander until, in some cases, it will join itself into the spherical again to become an oxbow.

At home you can begin to discover some of the wonders of the rhythms and movements which occur inside seemingly still forms. Using some clay, model the meandering bed of a river just by feel. Then as you pour water down the channel, put some dye in it. In this way, the movement of the river can be seen. How it meanders, moving down, swinging to one side, turning and then moving across and swinging to the other. A tremendous alternation of rhythm and movement. The river picks up sand from one side and deposits it on the other. A river creates its own form and recreates it constantly.

This can also be seen in sand formations. I'll say a word here about this because it is so interesting. Maria Thun writes in one of her calendars that while she was on vacation for a month by the north sea she noticed that sand patterns changed forms according to where the moon was in the zodiac. Since I live near the sea in Maine I have begun to examine this and have been able to confirm some of them. At first I thought it was merely the ebb and flow of tidal patterns, but it wasn't. The water that forms these trickles oozes out of the sand long after the tide's gone out. It is as though you had taken a plant and cut it. The signature at that moment is left in the plant via the sap. So, too, with this. Cut off from the totality from the watery body of the earth, these oozings rise to the surface through capillary dynamics and then begin very slow, delicate meanders down the sloping beach. Within these rhythmical movements lies a signature which changes according to what is happening astronomically.

The greatest sin that one can do to water is to straighten out the meanders in rivers. The Army Corps of Engineers has always wanted to straighten things out, and they've done so on a large scale. Now they're having to go back and put the meanders back in. In an old map of the Rhine (c. 1830) the Rhine was full of twists and turns, and it was a wise man who could navigate that river. He knew the currents, he knew the color of the water. He knew the winds. He knew the banks. But it wasn't efficient enough. So the Germans straightened it out. The result is that now there is 23

million cubic meters of dredge in the Rotterdam Harbor every year. What happened? Having straightened it, taken away from the river its rhythmical regulation, the Rhine flowed faster and drew the ground water from the banks. Erosion occurred. For a while Holland thought this dredge was useful, because it could build up new land with it, but now the sediment is so toxic they can't use it. This is a dreadful thing to do to any body of water. Those of you who have ever seen rip-rapping on streams, where stones are put along the banks to keep the stream in bounds, should take a good, hard look at what happens to a stream after it lets go. Rip-rap finishes and the stream goes absolutely haywire, uprooting trees in its way. It doesn't belong to the nature of water to confine its rhythmical movement.

Water is an element which occupies a position between the great polarities in the world. Water is a great between element. It occupies a position between life and death. No life can come into being without it. No life can be sustained without it.

Heraclitus, the pre-Socratic Greek philosopher, said that form is movement come to rest. I feel very strongly that one must come to look at form as movement. Follow natural forms with your eye, draw them, move them, and bring them into movement. Understand the movement that gave birth to the fixed lines and edges of the finished form.

Using a tray filled with half water and half glycerine (for body) we can make the forms of water's movement visible. Sprinkle lycopodium powder (the dusty spores of club moss) over the liquid and draw a rod through the mixture. The lycopodium powder will reproduce the incredibly delicate movements within water and make them visible. You might even try to reproduce these movements as a form drawing on a large sheet of paper -- first a little bit of a wave, then a sweep of growth which curls back on itself. As Schwenk writes:

united by a meander winding its way between them, the vortices alternate in corresponding pairs, one slightly ahead spinning one way and the other behind spinning the other way. (Sensitive Chaos, p. 51)

You could go across a whole room reproducing these movements, dancing them, so to

speak. Incredibly active surfaces and spaces.

The wave that has moved in on itself has developed an inner space. Think how this happened in evolution, the development of inner spaces and organs. This is an absolutely archetypal picture, an inward going process, the process of taking the outer surface and making it "in."

This important phenomenon -- the curling in of folds or layers to create a separate organ with a life of its own within the whole organism of the water -- does actually occur in the forming of organic structures... The hollowing out of inner spaces is a fundamental process, an archetypal form-gesture in all organic creation... where in the wrinkling, folding invaginating process of gastrulation, organs for the development of consciousness are prepared (*ibid.*, p. 41).

But Schwenk goes further. He says that the mobile inner structure of the vortex and its series of moving sheaths *in itself* could be described as a kind of "sense organ." Water, he says, is the impressionable medium *par excellence*, "a medium

...interwoven with countless sensitive membranes which are prepared to perceive everything taking place in the surroundings. Water is not enclosed within its inner surfaces but open to its surroundings and to all the stimuli and formative impulses from without (*ibid.*, p. 65)

Indeed, Schwenk goes on to say, the very movement within the vortex is a sensitive reflection of the movement of the cosmos. If you place a small moving object in a moving vortex, it will always maintain its direction of axis within the vortex. That is extraordinary! This indicates that in the vortex activity there is something that remains firmly connected, even though its moving, something quite stationary. The pointer always remains parallel to itself no matter where it moves. Schwenk maintained that this arose from the vortex's connection to the entire solar system:

...the vortex with its different speeds -- slow outside, fast inside -- is closely akin to the great movements of the planetary system. Apart from minor details, it follows Kepler's second law of planetary movement: a given planet circles round the sun as though in a vortex inasmuch as it moves fast when near the sun and slowly when further away. (*ibid.*, p. 44).

The vortex and its suction center can be made more visible by the use of a plexiglass cylinder. A plexiglass plate is glued to the bottom with epoxy and a one-inch hole is drilled in the plate. In the hole a rubber lab stopper is inserted and the cylinder filled with water. When the water has settled, the stopper is pulled and some potassium permanganate

poured into the vortex. This purple dye makes it possible to see the vortex "breathe."

It's an extraordinary thing. It will breathe up into itself and then broaden. A vortex will move up and down, up and down, and between those rhythmical movements, it will broaden. But that's not all. If you look very carefully in the vortex, you will see one sheath after another. It's a moving, rotating, pulsating series of sheaths -- sheath upon sheath upon sheath. It's an extraordinary thing to see.

When you stir the biodynamic preparations, you are creating within the body of water an organ, I'd say of perception, of cosmic perception. The movement of the vortex moves faster the closer you get the center axis and slower outside. Again, very much like the planetary movements. At least in my experience, stirring the preparations is one of the most wonderful tasks one can have. Dead tired at the end of the day, milking cows and all the rest of the farm work that goes on. Getting a quick cup of tea and going out and stirring 500. Lots of it. And thinking, "Oh my goodness." Fifty-five gallons worth! And suddenly, you're *there*. You begin stirring this big mass of material, one direction with a vortex, as strongly as you possibly can, vortex down to the bottom. And then you break it and go in the opposite direction. You do this for an hour. Dead tired to begin with.

I don't know if it happens to you -- but it happens to me, and I was always fascinated. I always counted on it. About half-way through, the mass of water with its vortex begin to stir me! A much different situation. I was no longer tired, I was invigorated. Also, my sense was that the quality of the water was different, that the droplets were quite different. One time when I was stirring with a friend -- we were doing an apple orchard, about 100 gallons -- we swapped barrels in the middle of it. His was so different. It was incredible. I went back to my own barrel very quickly! It is so interesting what the stirring of these preparations must be -- this vortex, layer upon layer, a multitude of surfaces in movement, connected to the planetary movements and the fixed stars.

The same kind of forms belong to the musculature, the apex of the heart. Ralph Marinelli, a retired Waldorf school teacher in Detroit, is doing some extraordinary work studying the fluid flow in the heart. We know from embryology that the heart is *formed* out of the flowing and moving blood. The blood circulated before the heart "pumps." Lawrence Edwards in his wonderful book, *The Field of Form*, describes the sheaths of the heart, with their very interesting patterns of musculature.

Films of surfing show a great deal

of what lives in the surfaces of water, what lives in a wave. Surfers have a sense of gravity and levity which describes water, especially visible when the film is run in slow motion. Then you can see the enclosing form, the interiorization of space. In the ocean the waves move, but the water stands relatively still. When the ocean meets the land, however, it crashes and changes form. You can see turbulence, laminar flow and then the wonderful spiral form. How substance moves *through* form is very, very important.

In my laboratory I try to capture the formative movements of water with a camera and a double optical bench. Because this bench is set-up optically, I am able to photograph very specific layers of water and what goes on in there. Light sources at the bottom, condenser, an iris, lens and mirror. Light is shot up through a plate and the image then goes all the way back, and then I photograph what I see. You see something similar every time you put cream into coffee. You see tremendous eddies and swirls, where the cream follows between the layers of movement until it's all mixed. However, in the laboratory we don't work with a cup, but with an absolutely flat optical quality ground dish.

The movements are made visible through the fact that I have added glycerine, which has changed the viscosity of the water. A single drop falls from a needle, some thirty per experiment, five seconds between drops. The vortices come into being, and then they disappear again. Every new drop tells a different story. Once the lines and valleys appear they don't leave. Water of very poor quality has no form whatsoever in these tests -- no vortex formation. Polluted or dead water is insensitive to influences. This test, to my mind, is sensitive enough to give a picture of the qualities water must possess if it is to be capable of supporting life.

Naturally, this has led me to the practical work of re-enlivening water, bringing water into a movement in order to re-enliven it. The method I use involves the use of "flow forms" developed by John Wilkes, based on the indications by Steiner and the English mathematician George Adams. While working with Theodore Schwenk, John Wilkes, began to create surfaces over which water could run that would en-liven it. Schwenk tested water that circulated on different types of surfaces with the drop-picture method. When this work was cut short by George Adams' death, Wilkes continued to develop the necessary proportions until the water moved in the pulsating meander of a figure eight.

In Jaerna, Sweden, sewage has been successfully treated by means of two cascades of flow forms. This, with the addition of the

biodynamic preparations, is enough to turn this pond over every five days and create the microbiological life to break down the organic matter. It's quite a successful operation. It runs all winter long, and of course by spring there is build-up. But when the temperature rises, the microorganisms become quickly active again the organic matter breaks down. In fact, the site of this treatment lagoon is a park. People come out from Stockholm to have their picnics there, and only when they stroll around at the end of the park do they realize it's a sewage treatment plant! It's a wonderful place.

In New Zealand flow forms are used extensively for the mixing of the biodynamic preparations and for the preparation of organic fertilizers. John Pearce, for example, makes his own fish fertilizer and has found that using flow forms he is able to get the organic matter broken down faster and with far less odor.

The quest to find ways and methods of treating and cleaning water has led to totally biological systems. Biological systems are the only way that waste water can be treated in its totality. Even conventional wastewater treatment plants are agricultural organisms of sorts. Only you can't see the organisms. They're not cows or chickens. They're microorganisms. These microorganisms break down the organic matter. First the waste undergoes primary treatment, which removes the solids, the non-biodegradable materials, which is followed by biological treatment. However, a purely biological approach was pioneered by the Frenchman, Saint Bohaire, and developed further by Dr. Kathe Seidel of the Mex Planck Institute. Everything now achieved by NASA, Wilverton, TVA or San Diego using aquatic plants was begun by Dr. Seidel after the Second War. She was also a gardener, bless her heart, and she turned her attention to limnology, the study of inland waters, marshes and estuaries, everything having to do with sweet water. She became interested in the effect of plants upon water, which she saw in the marshes and wetlands. Then in laboratory situations she began to give these plants the most incredible amounts of toxins -- phenols. PCBs, the whole works. Incredibly toxic material. The plants, after a die-back or partial die-back would somehow re-emerge and thrive, while the water itself would become clearer and would be cleaned. The plants which Seidel used in her pioneering work were the common reed (*Phragmites communis*), the bullrush (*Scirpus lacustris*) and the yellow flag (*Iris pseudacorus*). Dr. Seidel loved to give a demonstration of the purity of her plant-cleansed water by drinking a glass of it. In fact, tests show substantial

removal of nitrogen, phosphorus and pathogens.

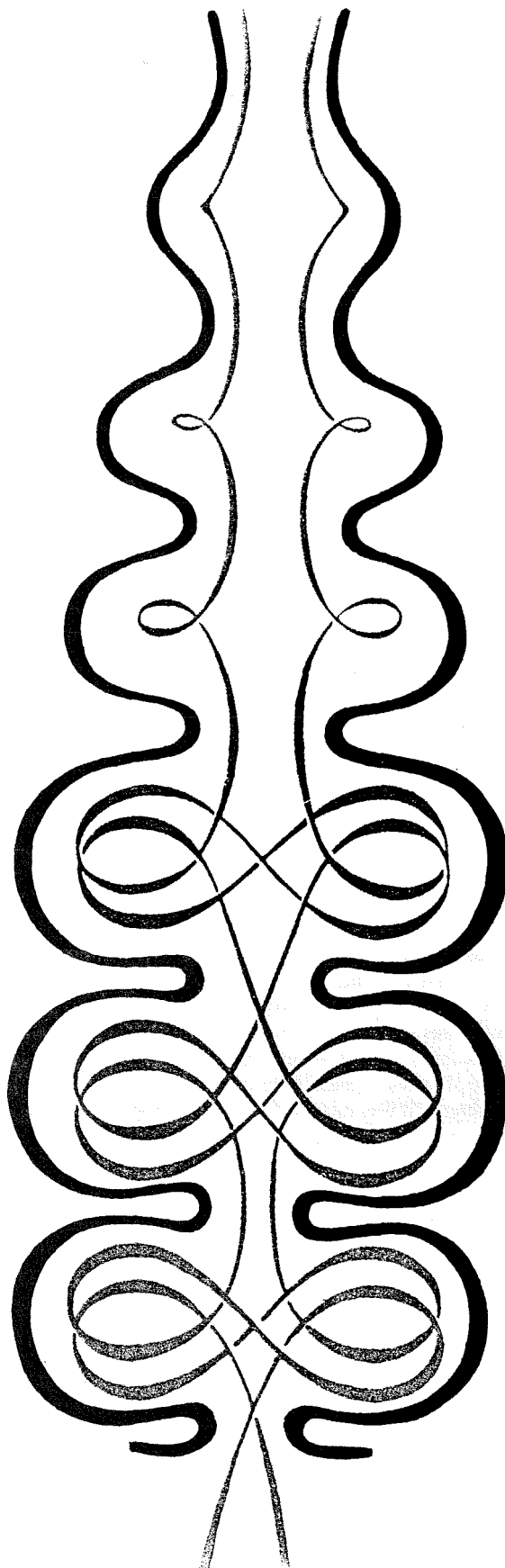
In this country John Todd, a co-founder of New Alchemy Institute on Cape Cod, has utilized totally aquatic biological systems. He has started a pilot project for the treatment of city water, using the terrible waste water from Providence, Rhode Island, in his tests. Common duckweed (*Lemna minor*) and water hyacinth (*Eichhornia sp.*) were used, as well as Oriental carp (Tilapia) and a Japanese snail. According to the analysis the water shows 99 to 100 percent removal of toxins.

Next we turn our attention to sludge, which is the by-product of any water-water treatment. As one old fellow from Maine said, "Nothin' in there but bug bones." Bug bones and solids -- which the engineers who designed these plants didn't expect to have to deal with. It's the single most expensive item in a town sewage budget. Imagine a highly engineered plant and then having to go out with shovels to clean up the residue! Using common reed (*Phragmites*) we have been able to de-water the sludge without pressing or drying. The microorganisms on the roots of the plants break down the organic matter. The plants keep the sludge layer open and aerated, reducing the volume of solids by over 90 percent. Operators can add sludge every two weeks in summer and every three weeks in winter. Residue need only be removed once a decade. Cost has been lowered from 14 cents per gallon to a penny. Even some heavy metals are removed by the plants, retained in the plant stalks. The build-up of sludge solids over the winter is broken down rapidly after thaw. There has not been -- to date -- a concentration of heavy metals.

With the cleansing of waste water we have followed a path from spiritual and ecological insight to practical application. I began with the image of the Grail Sword and the inner journey, the inner path of development, which Parsifal went through. Water is such a school. If we go to this school and take this path of development, learn to observe water, its movement in streams, the eddies about rocks, the confluence of streamings, the settlings of dew, the rising and movement of clouds and become a student of water in every aspect of its natural life and its role as a mediator of all life, then we are approaching the right use of the Grail Sword. The nature of water will lead us to ask the very question which for Parsifal unlocked the Grail Castle: "What ails thee?" In its totality water is a sense organ for the ailing earth. Through water we not only see the illness but also the very movements of life which could provide the cure.

Jennifer Greene has been a teacher -- at High Mowing School in New Hampshire -- and water researcher for many years. She now continues her water research in Maine. Those interested in flow forms or the organic methods of water treatment described in the article can contact her at Waterforms Inc., PO Box 930, Blue Hill, Maine 04614; (207) 374-2384.

1. Wolfram von Eschenbach *Parzival* (Vintage Books, 1961). The Story of the Grail Knights.



HYDROSCIENCE IN ANCIENT SANSKRIT: ITS RELEVANCE IN MODERN CONTEXT

by Dr. E.A.V. Prasad

The chronic and acute hydrological problems of the drought-stricken areas, chiefly resulting from the irrelevant imported technology, can be rapidly and successfully tackled by the 'people's technology', comprising of an innovative, user-oriented, mass approach for community self-help, with the aid of the simple, scientific concepts and techniques, contained in ancient Sanskrit texts.

Water (Ap) is one of the five primordial elements (*Pancha-maha-bhutas*) together with the Earth (*Prithi*: or mineral matter), the Fire (*Agni*: or geothermal energy), the Wind (*Vayu*: or gases), and the Sky (*Akas*: or the extra-terrestrial radiations). As water is one of the key elements for the very existence of life it was considered as one of the divine forms by the ancient Indian *rishis* who proclaimed the concept of the hydrological cycle as "Where, Waters, is your beginning, where your root, where is your centre, where indeed is your termination" (*Rig Veda*, Vii6.12) and worshipped all forms of water in the hydrological cycle and recited: "The Waters which are from the heaven, or those which spring up by themselves, the bright pure Waters that tend to the sea, may those divine Waters protect me here." (*Rig Veda*: Vii49.2)

WATER QUALITY IN AYURVEDA

In the standard texts of Ayurveda (the Indian science of medicine and longevity), such as *Charaka*, *Samhita*, *Susruta Samhita*, and *Ashtanga-Hridaya-Samhita*, there is a discourse on water which has been broadly classified into two categories, viz., atmospheric water (*Antariksha-jalam*) and terrestrial water (*Bhauma-jalam*).

The atmospheric water has been further classified as: rain (*Dharam*), hail (*Karam*), snow (*Tausharam*), and ice (*Haimam*). The terrestrial water has been classified as that of the river (*Nadeyam*), lake (*Sarasam*), tank (*Tadagam*), stream (*Nairjharam*), pond (*Palvalam*), shallow excavated pit (*Vikiram*), deep dug well (*Kaupam*), steeped dug well (*Vapyam*), and irrigated water (*Kaidaram*). The physico-chemical properties, including the seasonal variations, of these waters and their physiological effects in human beings have been described. Thus the ayurvedic texts consider all possible sources for water supply.

STANDARDS OF DRINKING WATER QUALITY

The quality of drinking water which plays a vital role for the health and longevity of an individual, should be: (a) aesthetic, i.e., free from colour, turbidity, taste, and odour; (b) chemically free from injurious substances; and (c) microbiologically pure with so low in the content of pathogenic organisms as not to present a risk to the consumer.

The 'International Standards of the Drinking Water Supplies', prescribed by the World Health Organisation (WHO), in terms of various parameters of hydrochemical and hydrobiological quality, have certain drawbacks.

-- These standards are primarily based on the water quality characteristics of the advanced countries of the humid West without much relevance to the tropical waters in the developing countries;

-- It is well-known that the trace elements or minor constituents significantly influence the peculiarities of water composition markedly affecting the physiological processes in all living beings in a strong manner. But the limits or guidelines, prescribed by the W.H.O., for few selected trace elements in drinking water do not have sound scientific basis;

-- The available techniques, either for water treatment or for water quality evaluation, are not practicable to be adopted in the developing countries like India. Such standards have been imitated and prescribed by the Indian Council of Medical Research (ICMR) and also by the 'Technology Mission on Rural Water Supply.'

The ayurvedic texts have distinguished the quality of rain water of the interior land (*Gangodakam*) from that of the rain water of the coastal areas (*Samudrodakam*) and prescribed the former as the standard quality for domestic water supplies and also suggested simple water treatment methods, involving aeration, sedimentation, flocculation and coagulation, filtration, disinfection, and elimination of toxic elements to obtain potable water of the prescribed rain water quality.

These details have been discussed in a recent technical report, entitled "Water Quality in Ayurveda", prepared by the present author under the book-writing scheme of "Hydroscience in Ancient Sanskrit Literature", sponsored by and submitted to the Department of Environment, New Delhi.

GROUND WATER IN JYOTISSASTRA

The ground water hydrology in *Jyotissashtra* (astronomy/astrology), represented by Varahamihira's *Brihat Samhita*, primarily deals with various biological and geological features, responding either directly to ground water or indirectly to the accompanying high relative humidity, as indicators of ground water, occurring at depths varying from 7-1/2 ft to as much as 560 ft, in arid and semi-arid regions devoid of surface water sources. In other words, the strikingly visible overground features, serving as indicators, are the effects for which the unseen underground water is the cause.

These indicators primarily consist of different plant species, their morphological and physiological features, termite mounds (or ant-hills) associated with vegetation, and colours of soils and rocks. All these indicators are strikingly visible, and easily recognisable environmental features which facilitate the precise location of the well sites to strike maximum quantity of ground water at the least depth in a given locality. It is most significant that these indicators are easily understandable for use even by the illiterates. These details have been discussed in the book, entitled "Ground Water in Varahamihira's *Brihat Samhita*", published by the Sri Venkateswara University under the U.G.C. "Scheme of Publication of Research/Learned Works."

LOCATION OF WELL SITES

At present, for well site location, the mystic 'water-divining' (also known as 'dowsing' or 'water-witching') method or the geophysical method, involving earth resistivity survey, is most commonly adopted. But none of these methods is giving satisfactory results; and quite often, enormous amounts of human and material resources are wasted due to faulty location of the well sites in the drought stricken areas.

The earth resistivity survey, designed and developed for the location of subsurface geological structures and ore bodies, has been and is being adopted for the location of the well sites in India. Because of the inherent limitations of this technique, R.G. von Nostrand and K.L. Cook (U.S. Geological Survey Professional Paper No. 499) have pointed out that "a logical and mathematical interpretation of resistivity data is only partly successful." The hydrogeological texts (Davis & DeWiest: *Hydrogeology*, John Wiley & Sons; p. 318) have clearly stated that these geophysical techniques cannot detect the small rock fractures, which yield most of the water to the wells, and hence result in high percentage of failure of the well sites. Further, Sri K.R. Karanth, Director, Central Ground Water Board, in *Groundwater News* (May-June 1986) has also stated: "In applying the geophysical methods, personal factors, experience, method

of survey, interpretive technique adopted, condition of instrument, and many other factors count.... When a well cited by geophysical method fails, it is not the method that has failed but the interpretation that is found wanting." Thus due to the complexity of this technique and uncertainty of its results, location of well sites for ground water development in the drought prone areas has been found to be a major problem; and in view of this, it has become a common practice to produce bogus certificates of well site location to obtain loans and other financial benefits from the agricultural banking agencies. Elaborate infrastructural facilities of ground water; and indiscriminate drilling of bore wells in an unscientific manner has been a common practice.

GROUND WATER vs. SURFACE WATER

Recently, *Bhu-Jal News* (April-June, 1986, vol. 2 (2), p. 20), a quarterly journal of the Central Ground Water Board (C.G.W.B.), projected "Seven Virtues of Ground Water" citing *Developing World Water* as the source for this item. According to this, the National Water Works Association of the U.S.A. has identified seven major economic advantages of ground water over surface water. These so-called virtues of ground water, pointed out by the U.S. agency, are examined with reference to the Indian context as follows:

Bore Wells

U.S.A.: Ground water can be developed in simple stages, drilling new wells only as the need for additional water arises. This flexible approach allows increase in the supply capacity to be closely tailored to meet demand growth. If actual water demand is higher than forecast, new wells can be added faster to the system. Conversely, if the actual water demand is lower than forecast, new wells can be postponed.

In contrast, surface water supplies require accurate long term water supply forecasting and construction of a storage system. If the system proves insufficient to meet the demand it cannot easily be expanded.

India: Every year several thousands of bore wells are dug, drilled or deepened for rural water supply, drought relief, and such other social welfare measures; but still the water crisis continues or even worsens; and major projects for augmentation of surface water sources even for drinking proposes, such as Telugu Ganga, have been and are being undertaken to meet the shortage of water supply in the country.

User Fees

U.S.A.: Staged development also allows flexible financing. Water users can often support the cost of the staged project through the user fees. Conversely, surface water development requires large capital investment and bor-

rowings that will have to be repaid with interest.

India: A vast majority of people are poor; and provision of rural water supply and urban community supply are regarded as social service and hence made free of cost. So also the Indian farmers in the vast drought-prone areas need government subsidy for ground water development for irrigation purpose.

Evaporational Loss

U.S.A.: Water evaporation is eliminated in ground water storage. In contrast, surface water reservoirs lose significant amounts of water through evaporation.

India: In the vast arid and semi-arid tracts of the country, evaporation of water results in high relative humidity which ecologically plays an important positive role for the welfare of the organisms.

"The Waters which are from the heaven, or those which spring up by themselves, the bright pure Waters that tend to the sea, may those divine Waters protect me here."
(Rig Veda: Vii49.2)

Ecological Interactions

U.S.A.: The use of ground water requires little land to be acquired since it is stored in vast quantities beneath the surface of the earth. The land above the ground water aquifer may still serve as productive farmland. In contrast, the construction of surface reservoirs requires the acquisition of much land which is subsequently flooded with loss to agriculture and forestry.

India: (a) The construction of surface reservoirs provide wages to a large number of unemployed rural poor, particularly during the recurring periods of drought;

(b) Surface reservoirs serve not only for water supply but also for power production, fishing, (commercial and sustenance), recreation, aesthetics, and so on.

(c) The surface water bodies intercept and store water of the seasonal rainfall, reducing the wastage through surface runoff and facilitate percolation and infiltration for ground water recharge to meet the water shortage during the drought periods.

(d) Surface water bodies in arid and semi-arid regions create high relative humidity for which insects are especially sensitive. It is well known that droughts produce the eruptive type

of emigration which is commonly associated with the movement of swarms of grasshoppers, locusts, and other insects which invade the agricultural lands where high relative humidity prevails due to the availability of irrigated waters in the absence of surface water sources.

An outstanding example in this regard is found in the recent reports from the African countries which passed through a furious famine in 1984. From Senegal to Ethiopia, there is a new plague developed by billions of locusts, grasshoppers and other insects devouring the agricultural crops, resulting in enormous damage and disaster as devastating as famine itself; and an estimated expenditure of \$9 million during 1986 and \$10 million during 1987 is involved to combat this most serious infestation. In some parts of this continent it has been found to be cheaper to bring in food aid than try to control the adult migratory locusts and other insects.

Hence in arid and semi-arid regions, it is essential to adopt conjunctive use of surface and ground water; and agricultural development cannot be undertaken by ground water excluding surface water which plays a vital role in the ecological balance of the region.

Maintenance

U.S.A.: The economic advantage of a ground water supply is its minimum maintenance costs and long life. Ground water reservoirs remain unchanged over time. In contrast, surface water reservoirs fill with silt and dams may lose their integrity.

India: In the ground water seminar held in May 1986 by the World Bank, its Vice President, Dr. W. David Hopper, has rightly pointed out that ground water development in India and other South Asian regions, requiring pumps and power, can run into technical complications including operation and maintenance problems.

Water Treatment

U.S.A.: Ground water requires only minimal treatment and because it is naturally filtered and purified by the earth, it requires no extensive filtration where as surface water frequently requires elaborate filtration to remove suspended matter and costly treatment to make the water bacteriologically safe.

India: Salinity, iron, and fluorine (responsible for "fluorosis" prevalent as an endemic disease) in ground water are some of the major problems of water treatment to be tackled.

Ground Water Occurrence

U.S.A.: Because ground water is found everywhere, the earth provides a natural distribution system that diminishes the size of the piped distribution system. Surface water supplies, however, frequently requires extensive distribution system to bring it from the source to the consumer.

India: Occurrence of ground water everywhere is a fallacy in India. In the extensive hard rock terrains, consisting of igneous and metamorphic rock types, occurrence of ground water is controlled by rock fractures which are concealed by thick soil cover and vegetation. Hence ground water occurrence is restricted and its location is a major intricate problem in the hard rock areas.

Thus there is no special virtue for ground water nor any vice for surface water. The differences are found not in water but in the water management methods adopted by man. The hydrological problems of practical importance in the drought-prone areas in the developing countries have to be tackled, based on the ecological and socio-economic conditions of the region.

RURAL WATER SUPPLY

The World Health Organisation has declared 1981-90 as the "International Drinking Water and Sanitation Decade" to provide reasonable access to safe drinking water in rural areas. "Reasonable access" is defined as being that "a disproportionate part of the day" is not spent in water fetching and "safe water supply" includes treated waters or untreated but uncontaminated waters such as from protected bore wells, springs, and sanitary wells.

Potential Benefits

The provision of rural water supply means improvement of quality, quantity, and reliability of the water supply sources with reduction in their distance from the consumers. The reduced walking distance to fetch water saves time and energy and relieves labour which may be used for productive purposes leading to an economic benefit. Even if there is no economic value of the saved labour, still there are many social benefits from the time and energy saved and drudgery eliminated, because more time can be spent with the family or on domestic activities. The improved quality of water leads to improved health which result in: (a) lower medical expenditure; (b) an improved sense of well-being; (c) increased fitness of farmers and their cattle and hence increased agricultural crop productivity; and (d) a lessening of the debilitating effects of childhood infections.

Technology Mission on Drinking Water

The Department of Rural Development of the Ministry of Agriculture, Government of India, has set up the "Technology Mission on Drinking Water in Villages" to provide safe water supply for the entire rural population in the Seventh Plan period through its Accelerated Rural Water Supply Programme (ARWSP) and the Minimum Needs Programme (MNP) of the State Governments. But the Technology Mission, intended for Rural Water Supply, involves

all possible aspects of research and development (R&D), such as remote sensing and artificial rain, for development of all types of water supply needs for domestic, agricultural and industrial purposes, waste disposal, prevention of sea water intrusion, and so on, and not necessarily for drinking water supply for problem villages.

CONTINUING WATER CRISIS

Under the pretext of the international programme of provision of reasonable access to safe drinking water, every year several thousands of bore wells have been and are being indiscriminately drilled in the drought-prone areas in the most unscientific manner. Because of this, the surface water sources, through misuse and disuse, have been silted up and converted into cultivated lands and public lavatories in the rural areas, and as habitations and commercial complexes in urban areas. In the process, the water of the seasonal rainfall is wasted as runoff without much scope for infiltration and percolation for ground water recharge; consequently during the drought period, there is a marked depletion of ground water. Further among the several bore wells drilled in each locality, some are dry, some yield brackish water, and some yield potable water but the pumps fitted to them do not function due to very poor maintenance. Thus there has been a continuing or even worsening water crisis in both rural and urban areas. It is an irony that on one side the conventional surface water sources are allowed to dwindle off while on the other side, the problems of conjunctive use of ground water and surface water, and artificial recharge are discussed in seminars and symposia.

SOLUTIONS IN INDIAN HYDROLOGY

It is often said that research in India is imitative or repetitive but not innovative, and that quite often it is unrelated to the necessities and compulsions of our natural environment. It is true as far as the current practices of hydrological science and technology are concerned. Irrelevant imported technology, ill-conceived water management methods, and poor maintenance or utter negligence of the available water sources are chiefly responsible for the prevailing misery in the drought-prone, arid and semi-arid regions of our country. But it is heartening that excellent and efficacious solutions for these hydrological problems are provided in the ancient scientific Sanskrit texts.

Divinity of Water

The hydrosience in ancient Sanskrit is a symbolic way of presenting, with superimposition, the identity established, through *Raja-Yoga* or Sovereign Science, between: (a) the waters with their widely varied attributes physically existing as atmospheric, surface, and sub-surface waters, with different physiological effects in human beings (as described in *ayurveda*),

or chemically combined in plants and animals, soils, and rocks (as described in *Brihat Samhita*) in the terrestrial environment; and (b) the invisible, pure, divine water which exists as a reality somewhere else.

The Indian community is fully aware of the divine nature of water which is used in all religious rites and rituals at different stages from birth to death; but the people have to be constantly and continuously reminded that pollution of such divine water is the greatest sin, emphasizing the paramount importance of protecting and preserving all types of natural water sources for a healthy and prosperous society.

Restoration of Surface Water Sources

The surface water bodies, such as tanks, ponds, lakes, streams, and rivers, play an important role from both hydrological and ecological points of view. But in most places these have been legally or illegally reclaimed and occupied while some are in disuse or misuse. Hence restoration, revitalisation, and maintenance of all categories of surface water sources, in every village, should be scrupulously undertaken on a top priority basis. Here, political will is an essential prerequisite.

People's Technology

For rapidly and successfully tackling the pressing problems of a country, such as water supply in drought-stricken areas, two modes of approach need to be adopted simultaneously. These are: (a) People's technology, and (b) the associated research activity for further development and refinement.

The people's technology should include innovative, user-oriented approach with appropriate low-cost technology understandable to the general public, and flexible for modification at local level for self-help, so that they need not depend entirely upon the specialist technologist for an essential commodity like water.

In this connection it is relevant to recall that the Ministers of Health, who developed the "Ten-year Health Plan of Americans" (Annual Report: 1972., Official Document 124; Washington: Pan American Health Organisation), pointed out that the countries should utilise the techniques of 'mass Approach' and concepts of community self-help to provide water in rural areas.

Water management and water treatment methods, described in *ayurveda*, and the various environmental indicators, with emphasis on bioindicators, for location of ground water resources, described in *Varahamihira's Brihat Samhita*, provide an ideal people's technology. It involves, to a large extent, only the cost of conveying to the people the hydrological information, contained in the ancient Sanskrit texts, in an appropriate manner for allround progress and prosperity.

TRANSMUTATION THROUGH THE WAVE FIELD

by
Rhetta Jacobson Baumgartner

Nature does not transmute by chemical combination and reaction; but by altering the wave field. Energy is flowing into and out of the atom constantly from its wave field.

In this article I will paint a picture of the basic wave field as a series of vortices. The atom is sustained through the vortex which can be considered to function on a fourth dimensional level. The key to transmutation is to establish contact with the vortex, instead of with the atom's manifestation on a physical level; and, then change the structure of the atom before it is released and frozen into the physical level. Since the atom can only express what is flowing into it from the vortex, if we change the vortex, then the atom naturally relates to it in a different manner. If there are various interchanges of polarity patterns manipulated in the vortex, then the resulting relationship would be a change in electromagnetic lines of force which stem from the atom.

All spiral movements in Nature have individual characteristics. Through guided stimulation vortex systems can be changed and transmuted into other systems. So-called substance can therefore be transmuted into other substance; or one energy expression can be change into another energy expression.

The laws of the spiral are the keys to the understanding of Creation, the blueprint of the Universe. The spiral vortex is the road to Paradise!

Dr. Walter Russell said that the elements have characteristics according to what position they are found within a wave. We must have a picture of the wave to dissect so we can define some positions of certain characteristics.

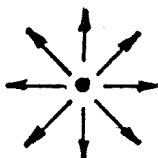
Let us review some of Dr. Russell's views on matter. Russell says substance (elements), all particles, mass, atoms, etc. is motion only. Motion in two ways, simultaneously! Motion is caused by the division of an equilibrium, and its extension is in two directions to create the two opposite conditions of pressure necessary to make motion imperative.

Visualize any point in space to represent equilibrium. Two directions of motion does not mean to the left and right of this point; but, rather a direction pushing outward as a spherical shell around the point, and a direction pulling inward toward the center (see picture 1).

The names of these two directions of motion is centrifugal (that which radiates outward) and centripetal (that which contracts or sucks inward).

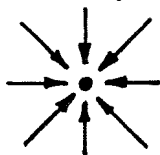
Each of these motions resists the action of

Centrifugal



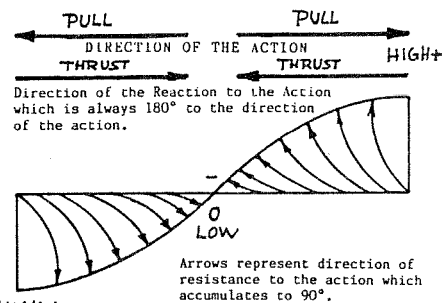
Picture 1

Centripetal



the other and in so doing gives to the two opposing forces the repetitive effect which makes this Universe a continuous cyclic universe. The combined triad effect of the two opposing oscillations and RESISTANCE is registered in waves of varying dimensions.

The resistance component of this triad causes curvature of the two opposing motions; therefore, there is no "straight line" direction or movement of energy in this Uni-



Picture 2

W.P.B.

verse.

The result of resistance of the inward pulling (centripetal) suction and the outward pushing (centrifugal) pressure is to deflect the intended direction from a direct or straight line to a curved or spiral line, which is the wave.

Let's trace the action of force, motion and resistance. An action takes place in space which expresses itself in pulling inward from within toward a nuclear center (see picture 2).

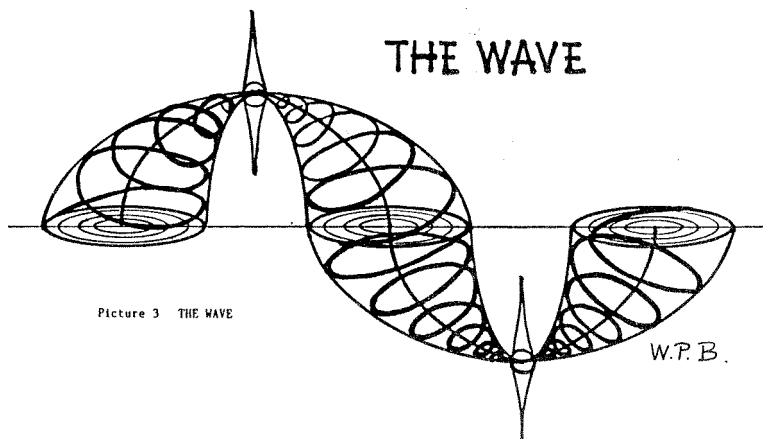
The direction of the thrust of resistance to the positive or plus action, and an equal thrust of resistance to its negative or minus reaction to that action is shown in the above figure by the arrows.

Along the sequences of waves so formed all of the systems within which matter is formed are centered. The wave is the basis of all motion.

The atom is constructed along the wave. Systems and striations of atomic, solar and galaxial systems are strung along waves like discs in the manner described in the article "Understanding The Continuous Universe", BSRF Journal, Sept.-Oct. 1990.

What we have here as waves are spinning "motion bodies which are vortices strung upon the wave shaft in pairs, point to point and base to base (see picture 3).

The inward pulling force proceeds to converge on a common center, but because of resistance accelerates towards the center in a tightening screw-like movement toward an apex of a cone. The outward pushing force



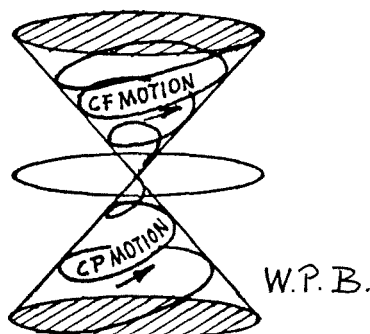
Picture 3 THE WAVE

W.P.B.

proceeds to radiate outward, but is also on a gradual expanding cone-shaped course toward the base of a cone (see picture 4).

Remember please, the elements of matter are all of the same substance in varying states of motion. Motion can change in 18 different ways, which are named by Russell "The Dimensions of Matter". The changing of these dimensions is what changes the form and character of matter. These are the dimensions which, when known and measured, will make man able to evolve or devolve, transmute or synthesize the elements at will.

There are a few important laws of these



Picture 4

dimensions which are good to remember at this point. 1. If any one dimension is altered, then simultaneously all the others adapt themselves and are altered also. 2. Dimensions have two opposite, extreme conditions. A plus or positive condition where it is increasing in that Dimension; and a minus or negative condition where it is decreasing. 3. The opposite condition of a Dimension is never completely gone, both conditions are always present; only one condition is in preponderance or dominant over the other.

<u>DIMENSIONS</u>	<u>OPPOSITE CONDITIONS</u>
Length	Long-Short
Breadth	Wide-Narrow
Thickness	Thick-Thin
Duration or Time	Eons-Instant
Sex	Male-Female
Pressure	Positive Pressure-Vacuum
Potential	Charge-Discharge
Temperature	Hot-Cold
Ionization	Integrating-Disintegrating
Crystallization	Melting-Freezing
Valence	Attraction-Repulsion
Axial Rotation	Fast-Slow
Orbital Revolution	Proximate-Distant
Mass	Dense-Nebulous
Color	Light-Dark
Plane	Appearance-Disappearance
Tone	High Frequency-Low Frequency
Ecliptic	Contracting-Extending

Let us take an example of manipulation of just a few of these Dimensions: A substance may have a high pressure, a charging potential and an increasing density; or, it can have a low pressure, a negative discharging potential, and a decreasing density or rarification. Just from these changes in a few dimensions we can recognize different types of substances. For instance, solids fit the first characteristics and gases the second group.

Now, let's describe some characteristics of matter which occur along the wave and show how the positions or locations on the wave influence those characteristics.

The characteristics on the left are effects

The nearer the base of the cone the greater the tenuity, tendency to ionize, the lower the pressure and potential and all EFFECTS of electro-negative preponderance.

Therefore, if we look at Silicon's position along the wave (see picture 6) we see silicon at amplitude position with the progression of the other elements evolving and devolving along the wave. Sodium will not always remain a sodium particle. As it increases its potential charge, its pressure, its hardness, its melting point, etc., it will transmute toward silicon.

Transmutation can be in two ways: Fusion or Fission. Here we do not mean the

<u>CHARACTERISTICS</u>	<u>DIMENSION TO WHICH THEY BELONG</u>
Attracting-Repulsing -----	Valence
Charging-Discharge -----	Potential
Integrating-Disintegrating -----	Ionization
Absorbing-Emanating -----	Temperature
Contracting-Expanding -----	Length, Breadth, Thickness
Freezing-Melting -----	Crystallization
Solidity-Tenuity -----	Mass
Hardness-Softness -----	Crystallization
High Pressure-Low Pressure -----	Pressure
Induction-Conduction -----	Potential
Endothermic-Exothermic -----	Temperature
High Melting Point-Low Melting Point -----	Crystallization
High Frequency-Low Frequency -----	Tone
Slow Rotation-Fast Rotation -----	Axial Rotation
Fast, Proximate Orbit-Slow Distant Orbit -----	Orbital Revolution

of centripetal motion. The characteristics on the right are effects of centrifugal motion. Now let's place these characteristics upon a wave (see picture 5).

Arrows indicate increase of characteristic. It can be seen that every effect in the left column is accompanied by closer proximity, while every effect in the right column is accompanied by greater separation.

All systems whose spirals are preponderantly closing spirals are positive systems. All systems whose spirals are preponderantly opening systems are negative systems.

All systems of preponderantly increasing potential are positive systems. All systems of preponderantly lowering potential are negative systems.

All preponderantly integrating systems are positive systems. All preponderantly disintegrating systems are negative systems. ETC.

In any wave the induction current seeks the high pressure at the apex of its cones of energy and the conductive currents seek the low pressure at its bases. The nearer to the axis and to the apex of the cone, the greater the density, pressure, potential, power-time and all EFFECTS of electro-positive preponderance.

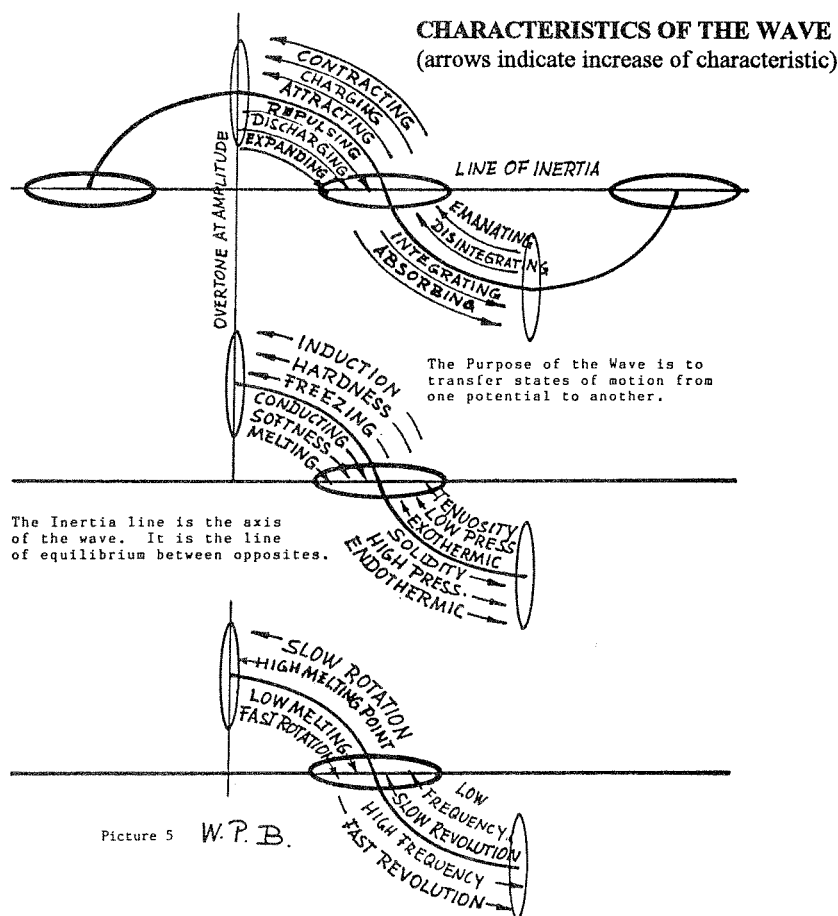
processes or methods described by Science, but Fusion meaning growing in positive potential, accumulating, integrating, etc. -- a constructive and generative process; and Fission meaning decaying, lowering potential, disintegrating -- a destructive, radiative process.

The works of Walter Russell lay down in explicit details a map of the elements upon the wave. With this foundation Mankind can have command over matter!

It was Dr. Russell's fear: "What will become of tomorrow? We of today are fast using up the resources which have taken the earth millions of years to store up for Man's use. The coal, oil, nitrates and minerals which Mankind has taken from the ground in a hundred years have made big inroads into its total deposits.

Let us assume that we have five centuries of supply, or even ten centuries. Man will live on this planet for millions of years before it spirals out beyond Mars orbit where human life will cease. What of them?

Are we despoiling the earth for our children of the far tomorrow? Are we emptying its bins for them? Are we profligately robbing even the fertility of our soil and losing it into



the sea by robbing the mountain sides of their forests?

The greed and ignorance of a few generations of today can wipe the human race from the face of the earth for long eons by sheer wastefulness of earth's resources. It would take millions of years for Nature to restore balance by bringing contents with new resources above the seas and taking old and worn out continents under her seas for regeneration." (Taken from "The Russell Cosmogony, A New Concept of Light, Matter and Energy")

It was Dr. Russell's hope: "A transformed science can avert this danger which Man is bringing upon himself by his own profligacy by rendering all of the coal, oil nitrates and phosphates of the world not worth the digging for Man of today, and needless for Man of tomorrow.

These things he can do NOW for they are simple in principle and the means of producing them are simple. A generation need not pass without extending the principle of Transmutation to the heavy metals, and render the gold which constitutes Man's idea of wealth-- for which he has killed untold millions of his brother men -- of no value other than as a utility.

Every product of Nature in the elements

of matter which Nature has produced so meagerly can be produced by Man in unlimited quantities with less effort than present day digging. This included iron, copper, manganese, platinum, aluminum, tin, and all other metals. Man has been primitive long enough. It is time he came into his heritage of knowledge which will give him dominion over the earth.

In your grind stone is aluminum, and in silicon and carbon -- the most plentiful elements of earth -- are all of the metals.

Where copper or iron ore cannot be found silicon can give them to us. If we cannot get supplies of tin or manganese from other parts of the world, silicon will give them to us.

The science of metallurgy must realize that all metals are unbalanced conditions of carbon and silicon. Iron and nickel are unbalanced positive and negative extensions of silicon. Silicon is their fulcrum of balance, just as two children on opposite ends of a seesaw are unbalanced extensions of the fulcrum which controls their balance. We now obtain nickel from other countries. We have an unlimited supply of it in our every mountain.

Just as sodium and chlorine find balance in their salt, and thus lose their metallic qualities, so do all pairs of metals lose their metallic unbalance in their salts. A salt in Nature is a balanced pair of elements.

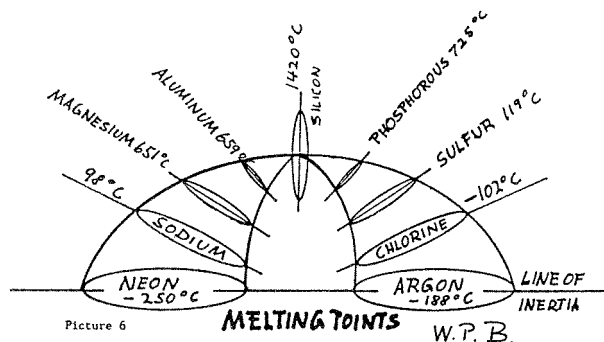
Reciprocal balanced reversals of motion is the only power Nature or Man has ever used. This is the bases of the electric current -- the piston of Nature's wave engines or of man's motors and pumps.

Science has heretofore used but one half of Nature's power principle, and has used even that the hard way. The EASY way, and the SIMPLE way, is to use in full the balanced reciprocal reversals of this two-way Universe which are forever taking place between the two conditions of gravitation and levitation which motivates this Universe.

World strategy of today is largely based upon the location of oil. The world stands ready to kill to protect its supply of oil for fuelling its planes and war ships.

Science can likewise render the oil supplies of the world useless as a fuel, and not worth the slightest quarrel among men for the supply needed for lubrication!"

Current research approaching Transmutation is the "Vortexian Mechanics" of ENERGY UNLIMITED. With the background of Russell's teaching and physical studies of the vortex components of the wave, we are learning the methods of guiding and controlling vortex and wave field action to guide and control atomic reaction. Subscribe to "CAUSES" Newsletter, Energy Unlimited; P.O. Box 493; Magdalena, N.M. 87825 for more info.



Drawings by Walter P. Baumgartner

LORENTZ CONTRACTION OF LENGTH

by Dorotheos C.E. Cody, D.D. (Hon.)

INTRODUCTION

Physicists, having discarded Ether theories, are attempting to explain the inner workings of nature. But as we have seen, this has resulted in dismal failure. For in the process of searching for explanations they have, for no other reason the sheer prejudice, discarded those very explanations! This is a bit like discarding the Gay-Lussac law and then attempting to explain the workings of the internal combustion engine or refrigeration. It simply cannot be done.

But, happily, after the Gay-Lussac law is discarded, research into the mechanisms of the internal combustion engine will lead to its "discovery". And so it is with the Luminiferous ether. As we probe more deeply into the secrets of the universe we will -- as demonstrated repeatedly by the likes of H. Fricke, O.C. Hilgenberg and C.F. Krafft -- return to the concept of the Ether. And having done so, we'll realise that the theories we've opted for in place of the Ether, if they are correct, are inseparably related to the Ether.

One such example is Albert Einstein's theory of Relativity. Originally formulated in response to the negative results of the Michelson-Morely experiments (1887-91), this theory sought to explain various phenomena in the universe. But what it offered was simply a branch of kinematics applied to bodies moving at high velocity. It stated for example, that length contracts to a given amount when the body moves at a velocity near the speed of light. It offered no explanation as to WHY this occurs. Yet it is ONLY on the basis of Ether dynamics that an explanation of this phenomenon of contraction can be afforded. And Ether Dynamics applied to other facets of relativity, such as increase in inertial mass, can explain these in a reasonable way as well.

This article, which is the first chapter of my forthcoming book "Ether Dynamics and Special Relativity", will attempt to do just that. The luminiferous Ether is to physics what the Rosetta Stone was to Egyptology, and its examination will reveal the hidden secrets of nature.

LORENTZ CONTRACTION OF LENGTH: PART I

It is a fundamental postulate in Relativity Theory that length contracts in direction of the motion of the body by a quantity

$$L = L_0 \sqrt{1 - (v^2/c^2)}$$

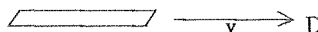
Where v = velocity of moving body

$c = 3 \times 10^8$ m/sec

L_0 = Initial (rest) length

Let us imagine a ruler 1 meter in length moving at velocity v .

In the above formula, let L_0 be the length of the ruler (1 m) and v , the velocity of the ruler, will vary from $1/3 c$ to $2/3 c$. It is moving in direction D.



At $1/3$ the speed of light ($1/3 c = 1 \times 10^8$ m/sec), the length has contracted to 0.9428090416 m.

We now accelerate the ruler from $1/3 c$ to $2/3 c$.

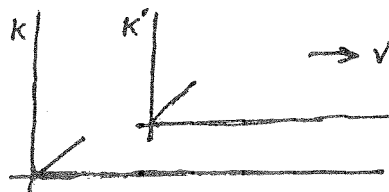
At $2/3$ the speed of light ($2/3 c = 2 \times 10^8$ m/sec), the ruler has now contracted to a length of 0.7453559425 m. Finally we decelerate the ruler to $1/3 c$ and the ruler has again the length of 0.942809416 m.

The ruler will contract to the given values EVERY TIME regardless of what the ruler is composed of (plastic, wood, or steel); chemical and physical properties of the ruler are irrelevant.

Yet the behaviour of the ruler (apparent change in length), when accelerated and decelerated implies elasticity of some substance. But is this substance the moving body itself, or something which surrounds the body?

To determine which, let us reconstruct a "thought experiment" performed by physicists some years ago.

The kinematics of this experiment is simple:



Let us imagine two reference frames:

K which is stationary.

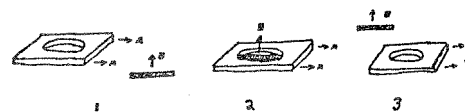
K' which is moving at velocity v .

If a ruler 1 m in length is placed along the x' axis in K', it is shortened when viewed from

K, but not shortened when viewed from K'.



If the ruler is placed along the x axis in K it is shortened when viewed from K', and not shortened when viewed from K.



In the thought experiment let us imagine a metal plate with a hole 1 m in diameter moving at 2×10^8 m/sec in direction A. A ruler 1 meter in length is moving at 2×10^8 m/sec in direction B (see 1). The Motion is timed just right so that the ruler and the hole meet in exactly the same place (see 2) and the ruler passes through the hole (see 3).

Now if an observer is riding along with the plate (corresponding to K') he will observe:

1. The diameter of the hole remains the same 1 metre.
2. The ruler contracts to 0.7453559925 metres.

Thus he will observe the ruler PASSING THROUGH the hole.

However a stationary observer on Earth (corresponding to K) will observe:

1. The hole contracts to a width of 0.7453559925 m.
2. The ruler has not contracted in length -- it has only gotten thinner -- it is still 1 m. in length.

Thus he will observe that the ruler CAN NOT pass through the hole.

The contradictory results of the experiment can only be explained by noting the fact that NEITHER the ruler nor plate has PHYSICALLY contracted in length. The contraction is only an APPARENT one. Thus the elasticity may be ascribed, not to the actual objects themselves, but to A SUBSTANCE which surrounds the objects in motion. Furthermore the contractions themselves are due to optical properties of this aforementioned substance.

The next question: Is the behaviour of the substance due to the momentum of the moving objects or is it a property of the substance itself?

To find out let us perform another experiment:

The Relativistic equation for increase in

Mass is given by

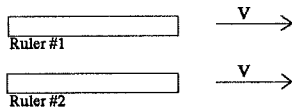
$$m = \frac{m_0}{\sqrt{1-(v^2/c^2)}}$$

where

m_0 = rest mass of the object

v = velocity of the object

Let us imagine two rulers moving side by side at exactly the same velocity, that are 1 metre in length.



Let their velocity be $2/3 C$.

Let the mass of ruler no. 1 be 1 kg and let the mass of ruler no. 2 be 2 kg.

Thus at velocity v (2×10^8 m/sec) the mass of ruler no. 1 is 1.31460786 kg, and the mass of ruler no. 2 is 2.683281573 kg.

In turn, momentum is given by

$$p = mv$$

where m = mass of the body

v = velocity of the body

The momentum for ruler no. 1 is 2.629282 $\times 10^8$ and the momentum for ruler no. 2 is 5.36653 $\times 10^8$.

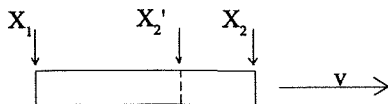
Contraction of length is given by

$$L = L_0 \sqrt{1-(v^2/c^2)}$$

Both rulers are 1 metre in length. Thus $L_0 = 1$ m. At velocity v (2×10^8 m/sec) the length of BOTH rulers are 0.7453559925 m.

Even though the rulers had different masses -- both initially (M) and as a result of motion (M) -- and therefore different momentums, the apparent contraction of length is the same. Thus the elastic behaviour of the substance is due to the substance itself.

The "substance" of course refers to a universal luminiferous ether, and contraction of length is due to streamlining in the ether



Let us now imagine a ruler 1 m in length moving at velocity v .

According to the theory of Relativity the beginning of the ruler (point X_1) contract to a length

$$L = \emptyset \sqrt{1-(v^2/c^2)}$$

i.e. it does not contract at all.

The end of the ruler however contracts to a length

$$L = 1m \sqrt{1-(v^2/c^2)}$$

Thus point X_2 (end of the ruler) shifts a distance

$$\Delta L = L_0 - L \text{ (point } X_2')$$

where $L_0 = 1$ m.

The greater the velocity (v), the greater the displacement (ΔL) of point X_2 .

The displacement also varies with length of the body in motion.

At $v = 1 \times 10^8$ m/sec:

$$L_0 = 1m \quad \Delta L = 0.0571909584 \text{ m}$$

$$\Delta L = L_0 - L$$

$$L_0 = 2m \quad \Delta L = 0.1143819168 \text{ m}$$

The displacement of point X_2 is exactly twice the amount when $L_0 = 2m$ as it is when $L_0 = 1m$.

Displacement as it varies with velocity:

Let $L_0 = 1m$

$$v = 1 \times 10^8 \quad \Delta L = 0.0571909584 \text{ m}$$

$$L = L_0 - L$$

$$v = 2 \times 10^8 \quad \Delta L = 0.2546440075 \text{ m}$$

Let $L_0 = 2m$

$$v = 1 \times 10^8 \quad \Delta L = 0.1143819168 \text{ m}$$

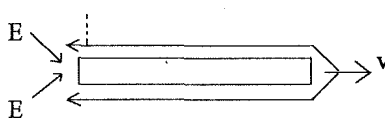
$$v = 2 \times 10^8 \quad \Delta L = 0.509288015 \text{ m}$$

Thus the displacement varies with:

1. Length of the body
2. Velocity of the body

The ruler moving at velocity v creates ether streamlines moving at velocity v_1 .

$$L_0 = 0$$



The streamlines travel the length of the ruler until they reach the point $L_0 = 0$.

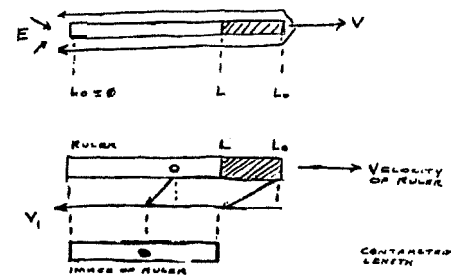
The motion of the ruler creates a relative vacuum in the ether, causing the eddy currents (E) to force the streamlines into the lower pressure area.

It is these eddy currents that are responsible for Lorentz contraction only in the direction of the motion of the ruler according to:

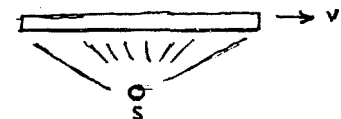
$$L = \emptyset \sqrt{1-(v^2/c^2)}$$

$$L = L_0 \sqrt{1-(v^2/c^2)}$$

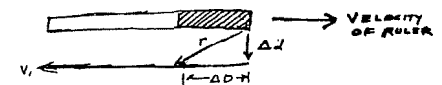
The first formula represents the point where ether streamlines are stopped by the eddy currents.



Imagine now a light source S. As the ruler arrives at the proper spot, the light source S comes on and illuminates the ruler.



A photon is reflected off the surface of the ruler at 3×10^8 m/sec.



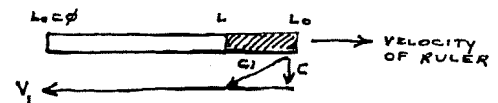
As the light moves a distance Δd , the ether streamline moves a distance ΔD . Thus the photon is displaced a total distance r :

$$r = \sqrt{\Delta D^2 + \Delta d^2}$$

The photon has traversed a distance of r metres in the same amount of time it WOULD HAVE traversed only a distance Δd .

Thus the velocity of the ether streamlines (v_1) adds to the velocity of the photon (C). The increased velocity is given by:

$$C_1 = \sqrt{C^2 + V_1^2}$$



The time required for the ruler to traverse a distance ΔD is given by

$$t = \Delta D \cdot V^{-1}$$

Where $\Delta D = L_0 - L$
 v = velocity of the ruler.

The ether streamlines move a distance ΔD in the same amount of time in the opposite

direction. As the ether stream moves a distance Δd , the photon has moved a distance Δd .

Thus the displacement Δd is given by

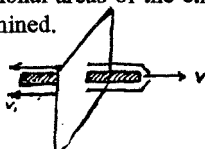
$$\Delta d = ct$$

For a ruler 1 meter in length moving at 1×10^8 m/sec, the quantity $\Delta d = ct$ is

$$0.1715728752 \text{ m}$$

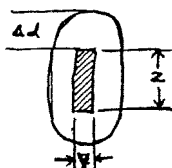
$$\text{OR } 17.15728752 \text{ cm}$$

Having determined the value $\Delta d = ct$, the size of the cross-sectional areas of the ether streams can be determined.



For a ruler of length L_0 , thickness y , width z , the cross-section area is

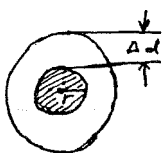
$$A = \frac{\pi}{4} (y+2\Delta d)(z+2\Delta d)$$



The cross-sectional area of the ether streams alone are

$$\Delta A = A - (yz)$$

For a rod of radius r the cross sectional area is



$$A = \pi(r + \Delta d)^2$$

The cross-sectional area of the ether streams alone are

$$\Delta A = A - (\pi r^2)$$

What follows are the numerical values of these areas for a body moving at 1×10^8 m/sec.

For a ruler 1 metre in length 2.5 cm wide and 0.5 cm thick the cross sectional area is 1006.632091 square centimetres.

And the cross sectional area of the streams alone is 1005.328091 square centimetres.

For a rod 1 meter in length with a radius of 1 cm the cross sectional area is 1035.74254 square centimetres.

And the cross sectional area of the streams

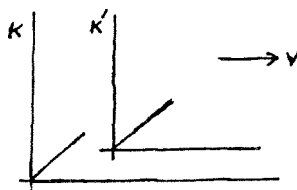
themselves is 1032.600947 square centimetres.

The amount of ether streamlining along an object 1 m in length moving at velocity v is not constant but depends on the cross sectional shape of the object in motion.

LORENTZ CONTRACTION OF LENGTH: PART II

Having described Lorentz contraction of length of a ruler moving at velocity v (in reference frame k'), we now turn our attention to the other side of the problem.

According to Relativity Theory all motion is relative motion.

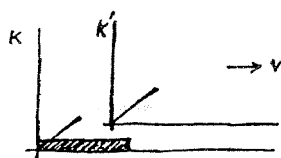


Thus;

1. Reference frame k' is in motion relative to reference frame k .

2. Reference frame k is in motion relative to reference frame k' .

An observer in k will not notice reference frame k' moving at velocity v . However an observer in k' will notice reference frame k moving at velocity $(-v)$. The velocity $(-v)$ is equal in magnitude but opposite in direction to the velocity v . Imagine a ruler of length L_0 placed along the x axis in stationary reference frame k . Reference frame k' is moving at velocity v .

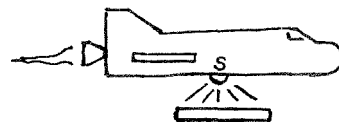


According to Special Relativity, an observer moving along with reference frame k' will observe the ruler shortened to a length

$$L = L_0 \sqrt{1 - (v^2/c^2)}$$

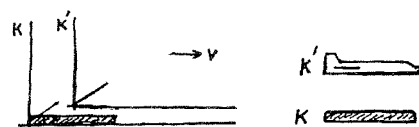
a value identical to the moving ruler in the previous situation. The identical value suggests some of the same mechanisms are at work to cause this form of contraction as with the contraction of a moving ruler.

A spacecraft is moving in space at velocity v . It comes upon a ruler sitting in space.

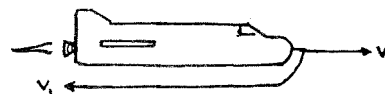


At exactly the right moment, when the ruler is directly under the spacecraft, a light source s comes on and illuminates the ruler. As the ruler is illuminated an astronaut looks out a window and observes the ruler as shortened.

In the above, the spacecraft corresponds to reference frame k' and the ruler corresponds to reference frame k .

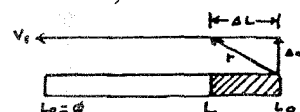


As the spacecraft moves at velocity v , ether streamlines which surround the ship move at velocity v_1 .



The velocity v_1 is equal in magnitude but opposite in direction to the velocity v .

In the meantime the light reflected off the surface of the ruler moves at velocity c ($c = 3 \times 10^8$ m/sec) a distance Δd .



As the photon moves a distance Δd it is displaced by the ether streamline moving at velocity v , a distance of ΔL .

The quantity ΔL is given by

$$\Delta L = L_0 - L$$

Where $L = L_0 \sqrt{1 - (v^2/c^2)}$ v = velocity of ship.

Thus the actual distance traversed by the photon is indicated (in the above diagram) by the vector r . It's value (magnitude) is given by

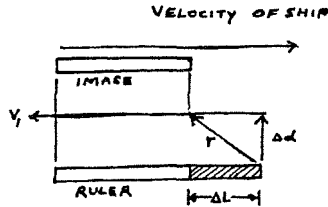
$$r = \sqrt{\Delta d^2 + \Delta L^2}$$

In the length of time the photon would have only traversed a distance Δd , it has actually traversed a distance r . Thus the velocity of the moving photon is greater than

c and is given by

$$c_1 = \sqrt{c^2 - v_1^2}$$

As the photon moves out of the moving ether streamline, it is refracted (by the relatively stationary ether) back to the original 90 degree angle (perpendicular to the ruler).



This we believe accounts for the Lorentz-Fitzgerald Contraction of length of the stationary ruler (situated in reference frame k) when viewed from the moving spacecraft (reference frame k').

LORENTZ CONTRACTION OF LENGTH IN A NON-INERTIAL REFERENCE FRAME

Thus far we've treated Lorentz contraction of length in a reference frame k' moving with rectilinear uniform motion (motion in a straight line at constant speed.) Let us focus now on contraction of length in a non-inertial reference frame (one which moves with constant acceleration).

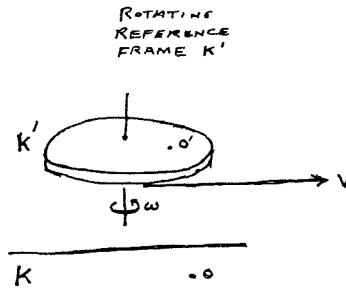
A rotating body is such a non-inertial reference frame. Velocity is a vector quantity, characterised by both magnitude and direction. Acceleration is a change in velocity -- either a change in magnitude (speed) OR direction. In a rotating body, the direction of the velocity vector is constantly changing. Thus the rotating body is a non-inertial reference frame.

The behaviour of clocks and rods in a non-inertial reference frame is properly the domain of General Relativity. However, the same mechanisms which cause contraction of length in a non-inertial frame are at work as with contraction of length in an inertial frame.

LORENTZ CONTRACTION OF LENGTH IN A ROTATING REFERENCE FRAME

According to the C.F. Krafft, the ether surrounding a planet moves along with the planet in its orbit around the sun, but does not partake of the rotation of the planet about its axis. From this we can extrapolate a general principle, viz. the ether surrounding ANY rotating body (e.g. a disk) moves along with the body in translational motion (motion in a straight line) but does not move along with the body in rotational motion.

From this we further surmise

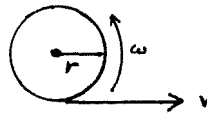


that to an observer (O) situated in reference frame k the ether surrounding the body is stationary. But to an observer (O') situated in reference frame k' (the rotating body) the ether is moving at velocity v which is equal in magnitude but opposite in direction to velocity v (the tangential velocity of the rotating body.)

Tangential velocity v of a rotating body is given by

$$v = \omega r$$

where ω = angular velocity (rad/sec)
r = radius of the body (metres)



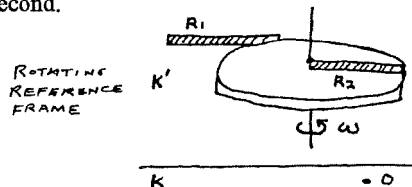
Angular velocity, in turn, can be computed from rotational frequency n (revolutions per second) or from period T (time, in seconds, required to make one revolution) by the formulas

$$\omega = 2 \pi n$$

$$\omega = \frac{2\pi}{T}$$

The property of the ether not partaking of a body's rotation is analogous to the streamlining of the ether along the ruler moving at velocity v described previously.

Imagine now, two rulers being placed in the rotating reference frame (i.e. the rotating body). Ruler R1 is placed along the tangent of the circular body, and ruler R2 is placed along the radius of the body (as shown). The body is rotating with an angular velocity of radians per second.



For the sake of clarity, we will assume the disc is not simultaneously moving with rectilinear uniform motion.

According to the General Relativity theory, an observer (O) situated in the stationary reference frame K will notice that the ruler R1 will shorten by an amount

$$R_1 \sqrt{1 - (v^2/c^2)}$$

Where v = tangential velocity of the rotating body ($v = \omega r$)

and will also notice the ruler R2 does not shorten. The ruler R1 contracts to a shorter length IN DIRECTION OF ITS MOTION.

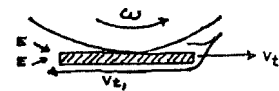
Let us now alter the experiment, to learn the mechanisms of how contraction of length occurs.

We remove both rulers, and place only one along the tangent of the circular body. A light source S is situated so that when the ruler is in the proper location, it comes on and illuminates the ruler.

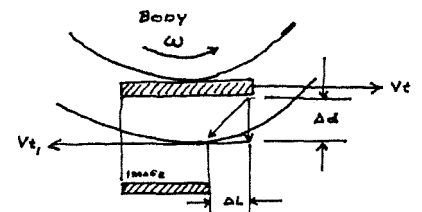


We then start the body rotating.

As the ruler moves through the stationary ether (the ether which does not partake of the body's rotation), it generates streamlines.



The motion of the ruler generates eddy currents (E) which cause ether to be "vacuumed" in toward the end of the ruler. This enables actual optical contraction to occur, rather than merely "shifting" the image (the eddy currents stop the streamlining).



The ruler now moves into the proper

position and the light source comes on, illuminating it. The light reflected from the ruler's surface travels a distance Δd . As it does so, it is carried by the ether streamline a distance ΔL . The quantity ΔL is given by

$$\Delta L = L_0 - L$$

Where L_0 = Actual length of the ruler

$$L = L_0 \sqrt{1 - (Vt^2/C^2)}$$

Thus, the final displacement is along the vector r . This displacement is given by

$$r = \sqrt{\Delta d^2 + \Delta L^2}$$

In the length of time the photon would have only moved the distance Δd , it has actually moved the distance r . Thus, the new velocity of the photon is:

$$C_1 = \sqrt{C^2 + Vt_1^2}$$

Where Vt_1 = tangential velocity of the circular ether streamline

The tangential velocity of the circular ether streamline is given by

$$Vt_1 = -(\omega r)$$

Where ω = angular velocity of the rotating body

r = radius of the rotating body

The negative sign denotes that the velocity Vt_1 is equal in magnitude but opposite in direction to the tangential velocity (Vt) of the rotating body.

We see IMMEDIATELY that the exact same mechanisms are at work here, as in the case of the ruler moving with rectilinear uniform motion. Indeed, the ruler moving with the rotating body, as described above, is a special case of this process.

SOURCES:

N. I. Koshkin and M. G. Shinkevich, Handbook of Elementary Physics (Moscow: Mir Publishers, 1982).

Krafft, Carl Frederick, The Ether and It's Vortices (Annandale VA: C.F.Krafft, 1955; reprinted by BSRF, 1987)

Einstein, Albert A., Relativity: The Special and the General Theory (New York: Crown Publishing Co., 1961)

Sometime in the 70s the author read a paper or an extract describing the paradox of the contracting-ruler-and-hole thought experiment. Thanks is tendered to that author and anyone with any information of knowledge of this paper accept thanks in advance for forwarding the same to this author in care of The Journal of Borderland Research.

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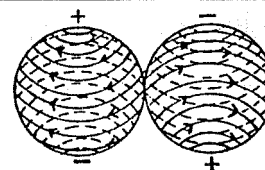
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HEAT AND EXPANSION NEED A NEW FOUNDATION

by Larry Spring

225 Redwood Ave., Ft. Bragg CA 95437

LARRY SPRING'S ELECTROMAGNETIC SPHERES



If a jar full of air was heated, conventional education says the molecules driven by heat become more active and bump against the walls of the container and cause pressure. Molecules are pictured rapidly passing other molecules to hit the walls and bounce off imparting some energy and push to the walls.

Before heating the jar was full of molecules and the lighter molecules could rise to the top. Heating does not SHRINK the molecules so there is more space between them. How then can they pass each other more easily when heated and cause more pressure on the container walls by impact.

If the same heated container walls were allowed to expand with added heat the original pressure could remain constant and the original sized molecules would have more space resulting in more vacuum space between molecules, according to the conventional teaching. The temperature could remain constant and only the container size would increase (like a balloon) so would the amount of contained heat energy. How can this added heat drive molecules past other molecules to bump on container walls? What known force in the heat pushes the molecules?

Heat expanded molecules can rise through gas or liquid like the heated expanded water molecules at the bottom of a boiling pot on a heat source. Here I contend the molecules themselves expand and demand more room. Here also we have one of the electromagnetic energies (heat - infrared) driving electrons into a more determined movement within the atom which expands keeping the container full. If the container walls are mechanically expanded the molecules will also expand some more, the electron drive distance will increase and the frequency will drop. The thermometer will read this as colder, while the contained heat will remain the same (while it radiates energy back and forth through the container walls until the temperature is equal to the surrounding air.)

The experimental end results of Robert Boyle's laws are correct as far as I know. The analysis used to explain the end results does not fit what I recognize happening with electromagnetic energy in the heat range which is the same as light but in an invisible lower frequency.

A glass tube sealed on one end filled with mercury when inverted into a pan of mercury

will pull a vacuum in the area above the column of mercury. This mercury column will stand 29.92 inches at sea level under normal barometric pressure. If a glass tube 50 miles long sealed on one end was filled with air and inverted in Earth's atmosphere, this column of air would stand about 45 miles (these figures may be only approximate) at sea level and be the same weight per square inch as the 29 inches of mercury.

Heat, a frequency of the electromagnetic spectrum, cannot drive whole atoms into more whole atom movement, as the atom is composed of positive protons and negative electrons which makes an atom neutral. The electric charge is balanced. Magnetic fields (heat in the infrared range) drive electrons in one transverse direction and protons in the opposite transverse direction depending on the orientation or polarity of the speeding magnetic field. An electrically balanced atom of equal positive (proton) electrical charge and negative (electron) electrical charge traveling at high speed as a unit will not be deviated when passing through a magnetic field. Neither will a neutron which is composed of a united proton and electron.

Also the whole atom contains protons which are the true weight which makes them hard to move, and electrons which are only 1/1840 the weight of a proton and by comparison therefore are easy to move. Heat then has only one main action which is to move electrons away from or toward the nucleus of protons. This can have only one effect which is expansion of the atom itself. The vacuum space of heated gas atoms must be inside the heated atom between the nucleus and electron which is vibrating back and forth between the nucleus and the outer limits of the atom. These outer limits are controlled by the neighboring atom's electrons which repel.

Heat expanded gas atoms rise seeking their volume over weight position among the other gas atoms. Heat adds no weight only expansion of size, or its attempt to expand in a closed container which results in pressure. Conventional teaching and explaining of heat just does not fit the way I see the forces at work.

EXPANSION OF ATOMS AND MOLECULES

I believe atom expansion is related to

electron vibration within the atom due to the amount of magnetic (electromagnetic) energy passing through in the form of radiation (heat, etc.). Unconfined and supplied with unlimited energy (heat, etc.) there would be no real limit to the possible expansion of an atom. At some point the electrons would become so activated and unconfined by neighboring atoms, like at the edge of space, that the atom would lose control of its electrons. The nucleus and remaining electrons around the nucleus would be considered an ion like in the ionosphere.

The diameter of an atom in the upper atmosphere could expand to 1000 times its sea level confined diameter size and the volume would be about 500,000,000 times. This size would get the atom up to about the size of a photon.

At this expanded size we may actually be able to see an atom as a single bounce surface for photons of blue light. We would get no detail information until the expanded atoms grouped together in some odd shape of highlights and shadows with individual smooth surfaces. Only the surface reflects. A tiny smoke particle may have its irregularities accentuated by multiple bounce surfaces for blue light, as much wood smoke looks blue.

BOILING WATER EXPANSION OF MOLECULES

A pot of water on a hot stove starts to boil. The molecules of water rise, as water vapor bubbles, to the top of the pan of water and continue rising in the air above the water (perhaps still as groups of molecules or invisible bubbles) until they reach density in the air equal to their own weight and expanded density. Being composed of water molecules normally heavier than air at a given temperature they would give up heat to the surrounding air and eventually return to a lower level. The process may go from vapor, to moisture condensed on a colder particle in the air as clouds, to settling as rain.

In an enclosed environment like a sealed jar the vapor molecules would circulate into the otherwise vacuum space to fill it with expanded molecules and some would return to the water as cooled molecules as others rose into the space above the water level that would be an adiabatic circulation which included the water as well as the space above the water.

Heavier atoms would simply have more protons and electrons.

Boiling is rapid evaporation of water receiving heat and therefore expansion at the bottom of the pot.

With normal evaporation the warmest water molecules could rise to the top due to slight expansion and as they received additional heat from the air above they would expand to a vapor size and seek their level in the atmosphere above the water. Rising molecules as vapor would be too small to be seen with photons of light.

A water molecule would have to receive an excessive amount of heat expand and leave with it, thereby depriving the neighboring molecules of their share of radiated heat; so they would have to wait their turn.

CONCENTRATION OF HEAT

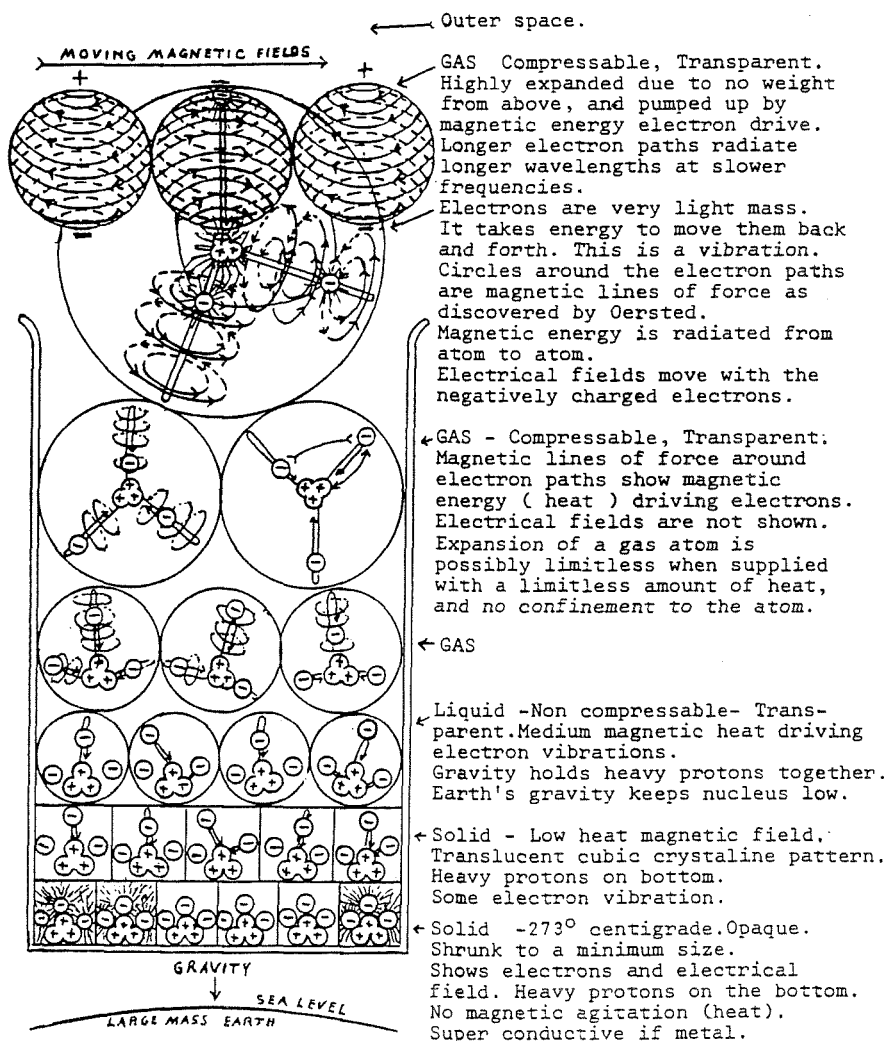
MAGNETIC ENERGY

Heat is magnetic energy fields or electrical energy fields on is being converted to the other and back and forth constantly at any temperature above -273°C or absolute zero.

Temperature rises as this electromagnetic energy is concentrated.

MAGNIFYING GLASS

Heat in the magnetic form like photons of light can be concentrated below a magnifying glass. Near the bottom side of the glass heat (the photons) are spread about the same as above the glass. At the focal point the magnetic energy is highly concentrated and very hot (and bright) past the focal point the heat is again spread over a large area. Heat can be similarly concentrated by a parabolic reflector. Concentration of energy is the key.



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FROM SHAMAN TO CHRISTIAN

by Harvey Martin

Before getting started there are a few areas that I need to discuss in order to avoid confusion. In the Philippines there are over 70 different languages that render the Philippines a virtual "tower of Babel" for the outsider researching Filipino culture. I am well aware that there are different names for shamans and witches in the Philippines depending on what part of the country that you are in, in fact there are so many different terms used to describe the same things, that I decided to take an "eclectic" approach, and use terms from throughout the Philippines, to point out that the phenomenon I will discuss in this chapter is not isolated to any particular region of the country. For instance the term "mananambal" comes from the Cebuano dialect of the Visayan region while the term "mangkukulam" comes from the Tagalog dialect of central Luzon. In spite of these linguistic technicalities, I have had to ask assistance of the elders and scholars of the contemporary repository of the information that I am presenting in interpreting and compiling this document.

The transition from Animistic Shamanism to Christian Spiritism of the segment of Filipino culture that I will relate is presented as it was told to me in the form of a story. Because of the fact that the chronological events in the development of Christian Spiritism happened in secrecy and were not recorded, this is the only way that it can be told.

In a manuscript dated 1578 and attributed to Diego Lope Povedano, an early Spanish encomendero on the island of Negros in the Visayan region of the Philippines, he writes of the natives of Negros that, "They have another way of killing their enemies who do them harm. In a bamboo tube they put some insects similar to small house flies which have hard skins. They call the "Barang", and when they receive any serious insult from a person whom they wanted to kill they get one of these insects from the bamboo tube and, tied with their own hair, it is sent to the victim. As soon as it reaches the person it makes its way into the body (of the intended victim) and is induced (by magic) into the entrails. The stomach of the victim swells immensely at high tide, and at low tide it becomes small."

In the Philippine Islands prior to the coming of the Spanish Catholics, the lives of the villagers were constantly beset with fears of being cursed with sickness or insanity by the servants of the destructive forces of evil that they called "kulam" or "gahoy". These

terms are the terms for witchcraft of the harm inflicted by a witch in the Tagalog dialect. While the witch himself or herself, as the case may be, is known by various names. The witchcraft cult has existed in the Philippines from time immemorial.

In Manila and the provinces to the North and West the witch is known as "mangkukulam". In the provinces directly South of Manila the witch is known as "manggagaway". In the central region known as Visayas the witch is called "mamamaraya". On the southernmost island of Mindanao the witch is called "mang-aamulit".

In order to simplify my task, I will refer to the practitioners of Kulam of Gahoy as "mangkukulam". The mangkukulam were sorcerers and mediums of various types of dangerous and destructive spirits. One of the most dangerous types were known as "Ingkanto". Ingkanto demanded human sacrifices at least once a year from those on whose behalf they intervened, starting with a member of the sorcerer's family. After having forged an alliance with an Ingkanto, the sorcerer received the power to cause insanity, sickness, and then offer to remove the curses from the victims of the sorcery for a price. The mangkukulam also offered their services to members of the community who wanted vengeance for unresolved grievances.

Locked in constant struggle with the mangkukulam were tribal shamans known as "mananambal". The mananambal were the emissaries of the healing spirits and constructive spiritual forces and spent most of their time actively dispelling the effects of the evil sorcery. Since the evil sorcery most often manifested in the form of physical illness and insanity, the training of the mananambal found its primary emphasis in the development and application of powerful methods of healing and exorcism. Filipino society at the time of Magellan's landing in Cebu in the sixteenth century, paralleled the sociological environment that had existed in the Middle East during the times of Jesus. The Filipinos believed in hierarchies of good and evil spirits who were engaged in constant struggle for the souls of human beings and equally believed in one supreme god known as Bathala. The ancient Filipinos like the Jews believed in one supreme God and had the unusual distinction of being the only monotheistic society in Asia.

The Filipinos of the sixteenth century were always searching for powerful methods

of dispelling the evil sorcery of the mangkukulam. The initial attraction to Catholicism among the Filipinos lie in the demonstration of its use as an instrument of healing and exorcism by the Catholic Friars sent to convert them. In the beginning of the seventeenth century, a Jesuit Father Pedro Chirino recorded an example of the exorcism of a woman in a village who had been bewitched and seized with trembling and paroxysms by a Catholic Friar, Chirino tells us that, "Our brother sent to ascertain what this disturbance meant, and when he learned what had happened he called the husband and gave him a little piece of the "Agnus" in a reliquary, exhorting him at the same time to have faith, and promising that his wife would soon be healed....The husband went home with the "Agnus", and no sooner had he applied it to his wife, than she was freed of the trembling and terror and remained calm. This occurrence soon became public, and another Indian (the term Indios was used by the Spanish to refer to the people of the Philippines) who had been bewitched by the same Indian woman, on seeing this marvel was convinced that God granted health to those who invoked him; accordingly he asked for the same relic, and he also was healed."

The Spanish Catholic Friars were very successful in their exorcisms and healing. So much so that the Filipino mananambal accepted the validity of Christianity on the basis of the ability of the Catholic priests to heal and exorcize more effectively than they themselves could.

The mananambal understood the ability to heal and exorcize as manifestations of mediumship and as such considered the Friars to be instruments of higher spiritual forces as they themselves were. The mananambal who lived in the Philippines during the time of Magellan believed in the existence of One Supreme God, yet they believed that the supreme God was remote and inapproachable. As a result of the inability to petition God directly, the mananambal relied on spirits who would intervene on their behalf. Many of the spirits that the mananambal relied on were double agents of sorts who would perform good as well as evil works. Seeing foreigners dispel the evil spirits that caused them so much trouble led to much speculation about and interest in the nature of the Spirit that used the Friars as its mediums.

The mananambal eventually learned that the Spirit who worked through the Friars was called Espiritu Santo (Holy Spirit). They also learned that this Spirit was nothing less than the Spirit of the One Supreme God whom they called Bathala and the Spaniards called Jehovah. The mananambal observed that Espiritu

Santo was a Divine Spirit who intervened directly on the behalf of those who believed in and served the one God. The spirits the mananambal employed at the time were very limited in comparison. As such the Holy Spirit of the Christians was considered to be a vastly superior to any of the spirits they had traditionally worked with. Having Christianity introduced as a highly advanced form of spiritist worship provided the mananambal with fertile ground for the indiginization of Christianity into their own ancient system of shamanic healing and exorcism.

The mananambal felt a strong kinship with the person of Jesus and identified with him and his trials. That the One Supreme God of the Spanish would send his only son to be born into the flesh in the role of a divine healer and exorcist was seen as an act of great significance to the mananambal. As witnesses to the power of the Spirit that worked through the Catholic Friars, a consensus was reached among the mananambal. It was acknowledged, that the reason for the superior abilities of the Friars in the work of healing and exorcism was the fact that they were aided and supported in their work by the highest and most exalted spirit, the Holy Spirit of Christ, while they were the instruments of good but lesser spirits.

In their understanding of Jesus as highest possible manifestation of their own works and aspirations, the Christian teachings that they received from the Catholics, were understood as shamanic instructions designed to elevate and sanctify the shaman to the sacred status of a medium of the Holy Spirit. As a medium of the Holy Spirit the mananambal could wield great power against the destructive spirits with impunity. Inspired by the goal of becoming a medium of the Holy Spirit, the mananambal practiced the teachings and instructions of Jesus to the letter and became very devout Christians. Ultimately the mananambal sublimated an ancient system of shamanic healing into the mission of Jesus Christ.

During the Spanish colonial period, most of the indigenous healers and shamans of the other cultures that the Spanish conquered were killed and their teachings destroyed as a result of the irreconcilable differences in their beliefs from those of the Spanish. However, in the case of the Filipinos, the close similarities between the social conditions and religious beliefs of the Filipinos with that of the people of the Middle East during the time of Christ, created a special situation that allowed an ancient system of shamanism to find new expression and survive the persecution and eradication that had occurred in other similar circumstances.

The Spanish, who considered the Filipi-

nos to be ignorant savages, had no idea how the teachings were being interpreted by the Filipinos. The Spanish assumed that the Filipinos didn't have the capacity to understand much less assimilate their religious teachings. The process by which converted culture assimilates a foreign theology and makes it their own is called the "indiginization of theology". The process of indiginization is characterized by an ongoing assimilation of an introduced theology into the prevailing system of beliefs of the culture into which the new theology is introduced. Eventually a new synthesis is reached that addresses the religious needs of new converts in the contexts of their native beliefs.

At the Third General Synod of Bishops in Rome in 1974, Pope Paul VI spoke of the inevitable emergence of new forms of Christianity based on the ongoing indiginization of Catholicism in the African, and Asian cultures. Pope Paul says concerning indiginization, "Indeed we admit that a certain theological pluralism finds its roots in the mystery of Christ, the inscrutable richness whereof transcend the capacities of expression of all ages and cultures. Thus the doctrine of faith which necessarily derives from that mystery calls for constant fresh research....".

The exalted Christian shaman however saw no contradiction in using their highly developed mediumistic practices and psychic abilities in the service of Jesus Christ. In many cases, conquered races adopted the outer form of Christianity but continued to worship their own ancestral gods as is the case in Haiti with the worshippers of the West African Voudoun Loa Spirits and the religion of "Santeria". Yet in the Philippines the acceptance of the supremacy of the Holy Spirit over their own ancestral spirits led to true conversion, but conversion based on their own unique and very different understanding of Christianity.

The Spanish Catholics eventually became aware of the beliefs of the sanctified shamans whom they considered to be heretics of the worst sort. The Catholics used every means at their disposal to enforce their religious dogmas. Through the use of the worst forms of torture and repression the Catholics finally succeeded in forcing the Filipinos to submit to the orthodox interpretation of Christianity. As a result, the majority of the Filipinos eventually yielded to the pressure, abandoned the leadership of the mananambal and became practicing Catholics under the Spanish. The mananambal who survived the persecution recognized the danger involved in openly discussing their insights into Christianity and continued their work in secret.

In Philippine culture, the trance has always been seen as a divine gift, a state of mind

wherein the curtain hiding another world is pushed aside. The trance-shaman then enters this other world, studies the landscape and meets the inhabitants of this other world and forms relationships with them. As the inhabitants of this other world can be persuaded to share their information, the trance-shamans have access to information that is inaccessible to ordinary human beings. The trance-shaman is then able to intervene in the affairs of the mundane world with a degree of insight that enables them to resolve problems that otherwise would be impossible to resolve. This ability of the trance-shaman to "speak" with spirits in order to gain insight into the causes of illness, as well as many other tribal concerns has been a cornerstone of Filipino spiritist practice throughout their entire history.

As early as 1604, a Jesuit writer, Pedro Chirino, describes the use of trance in a rural setting in the Visayan region of the Philippines: "The house is the usual place for the sacrifice, and the victim is...a dog or a cock. The mode of sacrifice is to slay the victim with certain ceremonies, and with dance movements which are performed by the priest to the accompaniment of a bell or kettledrum. It is at this time that the devil takes possession of them, or they pretend that he does. They now make their strange grimaces, and fall into a state of ecstasy; after that period, they announce what they have seen and heard...".

The belief that the information received during the trance came from the "devil" is common to 16th and 17th century Spanish theology. The morbid fear of the "devil" is an element present in all forms of Western Christianity. This fear is so pronounced in Western Christianity that virtually all forms of spirit intervention is seen as demonic. Yet Jesus himself was accused of satanic sorcery. Some of the witnesses to the exorcism of a man who could not speak said that, "He castest out devils through Be-el-ze-bub the chief of the devils". Jesus replied, "Every kingdom which is divided against itself shall be destroyed; and a house which is divided against itself shall fall. And if Satan is divided against himself, how can his kingdom survive? And yet you say that I am casting out demons through Be-el-ze-bub, by what means do your sons cast them out? But if I cast out demons by the finger of God, then the kingdom of God is come near you." (Luke 11:14-20). The irrational fear that most Western Christians have in regard to spiritism is certainly not supported by the teachings of the Bible.

In studying the history of Western Christianity, there is an abundance of evidence that the phobia Western Christians have about Spiritism was culturally induced. Perhaps the reason for this state of affairs is the fact that the

Catholic Church of the Middle Ages systematically tortured and burned anyone who demonstrated the ability to heal by miracles, prophesy, discern the true spirit, reveal words of wisdom or knowledge in the language of the spirit, or interpret the revelations that were delivered in the language of the spirit (1st Corinthians 12:1-12). In other words, the Christian religious leaders of our Christian ancestors systematically tortured and burned at the stake anyone who demonstrated an ability to act as an instrument of the power gifts of the Holy Spirit of Christ.

The early inquisitions carried out by the Catholic Church were portrayed as a means of ridding the world of witches, who were considered to be "servants of the devil". Actually it was a totally indiscriminate orgy of the destruction of innocents that was carried out with the covert goal of land confiscation and the decimation of any opposition to the establishment of a totalitarian theocracy. Modern theologians dismiss the abuses of the Early Church as water under the bridge. It is blatantly obvious however that the results of those horrible abuses live on in our contemporary religions in the form of a spiritist phobia. As a result Western Christianity has evolved into a religion that rejects one of the central themes of the teachings of Jesus.

Though the theologians and missionaries of various Western religions have insisted that the spirits contacted by native peoples throughout the world are "servants of the devil", anthropological studies have made it clear that there are good and evil individuals in every race and level of human society. And while those predisposed to evil will seek out and become "servants of the devil", the good individuals in an animistic society will be predisposed to the intervention of the Holy Spirit and use the power derived from the Holy Spirit for good purposes such as healing, counseling, and preserving social harmony. It has always been this way.

While conducting research in the Philippines I had the opportunity to meet Father Francisco Demetrio. Father Demetrio is a Jesuit professor at Xavier University in Cagayan de Oro City on the island of Mindanao. At the time I met with him he was the head professor of the Department of Philippine Studies -- Folklore and Folklife Research Center. After reading some of his written works which I found to be very impressive, I wrote him in Mindanao and asked him if there was a connection between the beneficial spirits employed by the mananambal for exorcism and healing and the Holy Spirit that the Christians invoke for the same purposes.

In his reply he told me, "Indeed there has been a continuity between the ancient shamanic

healing before the advent of Christianity and the present day mananambals among our people. I don't doubt that the Holy Spirit is operating through them now, even as he was in the past through their own culture and spiritual development." This indicated to me that Fr. Demetrio believed that it is entirely possible that the Holy Spirit was instrumental in the good works of individuals of any culture who were so inclined whether they had heard of Christianity or not. I questioned him about this point later and he confirmed that he had derived that opinion from many years of fieldwork in the study of tribal shamanism.

As the means of contacting an employing the assistance of the Spirit, the trance state has remained the main means for communing with the realities and the Reality behind the material world for the Filipinos. In the Philippines the ordinary Catholic uses prayer as a means of entering into religious trance which is evident in the crucifixion rituals that occur every year.

The mananambal, through their long observation of the healing and exorcism work of the Friars, were aware that the Friars were mediums and that the Spirit who worked through the Friars was superior to their own tribal spirits. Yet their Spanish masters did not allow them to learn to read, and as a result, the mananambal were not able to study the Bible and learn of the teachings of Jesus or the attributes of the Holy Spirit until long after the arrival of the Spanish.

As the Catholic rule in the Philippines began to disintegrate, and more of the mananambal became educated and learned to read, they began to study the Bible in earnest. The widespread references to mediumship in the case of the Old Testament prophets, and the instructions of Jesus concerning the Holy Spirit, gave the sanctified Filipino mananambal a great deal of insight. They realized, that the Spanish had unwittingly introduced them to a teaching that could be understood and utilized in the context of Filipino society with its traditions of spirit worship, in ways that were impossible for secular European Catholics who had been spiritually and emotionally traumatized by inquisitions and witch-hunts to grasp.

In studying the Bible they learned that Jesus had identified God the Father as Spirit and indicated that the proper form of worship was worship "in spirit and in truth" (John 4:23-24). Jesus spoke of his return to heaven and the coming of the Holy Spirit that would follow his Ascension into heaven" (John 16:7-16).

Jesus further elaborated on the nature of the Holy Spirit when he said, "And I will ask of my Father and he will give you another comforter, to be with you forever, even the

spirit of truth that the world cannot receive, because it has not seen him and does not know him; but you know him because he abides with you and is in you," (John 14:16-17). Jesus in conclusion tells the apostles, "But the comforter, the Holy Spirit, whom my Father will send in my name will teach you everything, and remind you of everything which I tell you" (John 14:26).

While orthodox Christians defined the mission of Jesus to be the sacrificial offering of himself on the cross as payment for the sins of the world, it was clear to the Christian Spiritists that there was another equally important mission that he came to fulfill and that was the preparation of the world for the coming of the Holy Spirit. Jesus detailed the event in his prophesies and succeeded in preparing a select group of followers to receive the wonderful power that he had demonstrated in the event known as the Pentecost. The last words that Jesus said before he ascended into heaven were, "But when the Holy Spirit comes upon you, you shall receive power and you shall be witnesses to me both in Jerusalem and in Judea also in the province of Samaria and to the uttermost part of the earth." (Acts 1:8).

The events prior to and after the Pentecost were of great interest to the mananambal. It was during this period that the transmission to divine power that Jesus had prophesied was fulfilled. Jesus said that the Holy Spirit would come and it came. It came in fiery tongues of flame that descended upon the heads of the apostle (Acts 2:2-3) who then became instruments of the Holy Spirit and began to perform spiritual works that paralleled those that Jesus had previously performed. In studying the Pentecost the Filipinos came to understand the specific gifts which they had received from the Holy Spirit as the members of the "Body of Christ", the true church.

From the perspective of the mananambal, what seemed to have occurred was a process wherein the power that only Jesus had demonstrated initially was decentralized and literally poured into his followers, the Body of Christ on Earth. In reading the scriptures it becomes apparent that Jesus felt that initiating this outpouring of the spirit into his chosen was a mission of great importance. Jesus devoted a great deal of dialogue to this mission and clarified this aspect of his mission meticulously in the scriptures and continued to emphasize this great transmission of spiritual power right up to the moment of his Ascension into heaven.

Jesus' first instructions to the Apostles was to, "heal the sick, cleanse the lepers, and cast out demons". All three of these practices required the intervention of the power of the Holy Spirit. Jesus apparently wanted his dis-

ciples to have a practical working knowledge of the applications of the power gifts of the Holy Spirit. It was through total immersion in the healing ministry that he demonstrated to his followers the most effective situations in which the gifts of the Holy Spirit could be exercised. In his teachings, he elaborated on the proper attitudes to cultivate to properly predispose his Apostles as instruments of this great power.

The mananambal learned that the nine power gifts bestowed by the Holy Spirit were specifically delineated in the scriptures, and that they were classified in three categories. First, there are the gifts of revelation which include, 1) Words of Wisdom, 2) Words of Knowledge, and 3) The discernment of the True Spirit. Second, there are the gifts of power which include, 1) The Gift of Faith, 2) The Gift of Healing, and 3) The Gift of the Working of Miracles. Finally we have the gifts of inspiration which include, 1) The Gift of Prophecy, 2) The Gift of Diversity of Tongues, and 3) The Gift of Interpretation of Tongues.

Upon learning of the specific attributes of the wondrous spirit that used them as its instruments, the educated and by now Christian mediums saw a sound basis indeed for the continuation and development of their Spiritist practices. They strived to develop their spiritual gifts in the service of Christ. Following the example of Jesus, they chose the Christian healing ministry as the classroom where they would develop themselves as instruments of the Holy Spirit. Like the Apostles, the ministry of the Spiritists took the form of healing missions that ministered to the legions of the poor in the Philippines who suffered from sickness and infirmities of various types.

Eventually these descendents of the mananambal began to call themselves Christian Spiritists. By 1850 the Christian Spiritist community was organizing itself into a practicing congregation and had begun to hold services in strict secrecy. They were severely persecuted by the Catholic Church as well as the medical profession but persisted in their work. As a result of the culture and native beliefs of the Christian spiritists they gained unusual insights into Jesus' teachings about the Holy Spirit. Belonging to a culture steeped in spiritualism the instructions of Jesus concerning the Holy Spirit was one of the main topics of discussion in their services. Of special interest were the revelations of Jesus in John 14:26, where he says, "when the spirit of truth has come, he will guide you into all the truth, and he will not speak from himself; but what he hears he will speak; and he will make known to you things which are to come in the future, he will glorify me, because he will take

of my own and show it to you."

The Biblical reference about the Holy Spirit speaking not from himself, but instead speaking only what he hears inspired great interest among the Christian Spiritists. The Christian Spiritists were well aware of the abilities of spirits to "speak" through them as well as to them, and Jesus was obviously discussing the manner in which the Holy Spirit would communicate or "speak" with them.

In the Philippines when discussing spirit communication if one refers to a person who speaks not from him or herself but speaks what they hear, then this reference is clearly thought to refer to a medium. In the case of the scriptures it wasn't a person who was referred to however, but a spirit. It began to occur to them that the words of Jesus were coded in a way that concealed a great mystery.

This understanding led the Christian spiritists to experiment with a very unusual form of worship service. They reasoned that what Jesus was referring to was the possibility of invoking the Holy Spirit into the body of a sanctified Christian medium in the context of a Christian worship service in order to open up communication with and "speak" to the Holy Spirit in order that they could receive instructions directly from the spirit and be "taught everything" as Jesus had promised that they would.

In order to invoke the Holy Spirit, special hymns were written and sung. The insight that they had applied to Jesus' instructions yielded excellent results. They began to "speak" directly with the Holy Spirit through their Christian mediums in exactly the way that Jesus said they would. In the context of this new form of Christian worship service the Filipino Christian Spiritists opened up an oracular dialogue with the Holy Spirit of Truth.

Once the dialogue was established, the Christian Spiritists became the focus of the efforts of a group of spirits known as the "spiritual messengers of Christ". One of the early member tells us in 1904 that, "The messengers of Christ made themselves manifest as medicine in the form of magnetic fluid which flows from the spirit world through us to introduce Christian Spiritism through healing". The goal of the "spiritual messengers of Christ" was to establish an organization through which they could prepare the world for the fulfillment of the Dispensation of the third person of God, The Holy Spirit.

In order to accomplish their goal the messengers of Christ taught the Christian Spiritists how to become conscious instrument, capable of allowing the Holy Spirit to work through them. The techniques and processes involved in the education of the Christian Spiritists as revealed by the messengers of

Christ became formally known as Christian Mediumship Training.

The spiritual messengers taught their followers that based on the teachings of Jesus, the Holy Spirit lived within us all as individuals but was functioning in most cases on the subconscious level and that most referred to its presence as their "conscience". Through the Christian mediumship training, the Holy Spirit was engaged one step at a time until it could function unobstructed through the Christian medium.

The Christian Spiritists developed the power gifts of the Holy Spirit in order to perform healing miracles that served as an inspiration as well as an opportunity to those touched by this ministry to reconstruct their lives in a spiritual way. Needless to say, many of the instructions received from the Holy Spirit through the sanctified Christian mediums concerned methods of spiritual healing.

Once the aspiring mediums were ready, the messengers of Christ instructed them to minister to the sick and afflicted. When the mediums began to heal, the miraculous power manifested through them and the magnetic fluid of the Holy Spirit discharged itself through the healers into the bodies of the sick and afflicted with great power. Through the dispensation of the magnetic fluid many miracles have manifested to bless the lives of the sick and afflicted.

The congregation swelled as those restore to health joined. In 1898 the Philippines became a possession of the United States. In the next article I will relate the incredible story of the organization that the "spiritual messengers of Christ" created to establish the Third Dispensation on earth, The Union Espiritista Christiana de Filipinas Inc."

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THE SEMIOLOGY OF CROP CIRCLES:

Primary Messages

by James T. Westwood

In my first paper on cereographs -- crop circles -- of July-August 1991, I discussed the semiotic properties of these strange indentations in grain crop fields in Europe, North America and elsewhere. (The preponderance have appeared in the southwest of the United Kingdom over the last decade, mostly during the last two years.)

Semiotics, the science of signs and symbols, has three components: syntax, semantics and pragmatics, i.e., structure, meaning and usage. To interpret the cereographs semiotically involves explaining their signing structure, meaning and uses. Of cereographs those components are vague and undetermined, even after years of study by competent people. Yet, it should be recalled that in a not dissimilar case the hieroglyphs of the famed Rosetta Stone were not read meaningfully and in their original structural order until 21 years after the Stone's discovery in 1799.¹

As to semiotic structure, the most basic approach would seem to be one of grouping cereographs by time and location of appearance. For this purpose a complete and accurate record is valuable. Some of these groups contain complex cereographic elements; others are singular and simple. Complexity greatly increases potential information content. I reckon that those circles which are connected by a bar are intended to be "read" as a doublet; however, the cereographs should not be thought out of hand to represent a language. Thus, linguistic doublets such as common letter doublets may not be what is being conveyed. Rather than seeing in cereographs a language in the linguistic sense, I think we should consider them as abstracted symbols under the proposition that an ETI would not necessarily ring us up on the telephone but might, rather, use grain fields as a pad or tablet or sorts.

As to usage, most observers whose reaction is semiotic (vice meteorological or "environmental") have put usage down to communications -- from or to whom not being clear now, nor forming of a consensus. In this connection, we should resist vanity and hubris: One ETI could be leaving messages for another using our pads.

Secondary reports indicate that no agent has yet been observed in the act of making a cereograph. The "stylus" that is etching these symbols in to grain fields is said by watchers to make a trilling noise, and some kind of

"dancing rods" have been reported. Yet there seems to be as yet no empirical observation of the instrument that makes the circles -- regardless that the circles all seem to be made during local darkness. In this connection we should keep in mind that the sensitivity and selectivity of human sensory organs are specific for narrow and discontinuous regions of a spectrum ubiquitously said to range from direct current to light. Therefore, to cite but two common possibilities, radar and infra-red imagery might (or might not) record data of interest during those apparently rare moments when cereographs are being formed. Trilling noise and "dancing rods" might be the result of atmospheric disturbance induced by ionizations, and that might connote the use of some form of directed energy (as in masers and lasers) by the cereographers.

As to the meaning of the crop circles, everyone who dabbles or more in crop circle studies would like to find the meaning or meanings of these mysterious symbols. I think that if the crop circles are CETI (communication of extra-terrestrial intelligence) then they are likely to be high in semantic quality and low in syntax as would be attempts in communicating across cultural or specie barriers made such by lack of a common communicating facility, e.g., a common language. We are reminded here that most languages are highly redundant; therefore only a very small common vocabulary has to be established to enable rudimentary but significant communication. For example, in one of Jack Vance's science fiction stories, such a vocabulary is established by earthlings who encounter bizarre but intelligent creatures on another planet. The thesis of that story is that communication per se indicates and defines intelligence.²

Moreover, because ETI may be technologically advanced does not mean that ETI is omniscient and flawless in communicating either among itself or with us. If ETI is trying to communicate with us, ETI might be proceeding somewhat heuristically, trying various high meaning/low syntax symbols to determine which ones seem to work -- a situation that might indicate semiotic pragmatism on ETI's part. If cereographs are made by a trial-and-error ETI that is a reason why, as I suggested in my first paper, that we should try mimicking back to ETI. It is by mimicry that all communications patterns and procedures

are learned. If we do that, we should do it in synchrony with ETI's syntax so that ETI might more readily understand that we are trying to find a common process. One must keep in mind that both ETI and we face high uncertainty and that it is useful to try mutually to reduce that uncertainty. Any kind of harmony chisels away some of the uncertainty. With rudimentary symbology and mimicry initial progress is slow and frustrating but subsequently efficiency improve.

In his 1967 *magnum opus*, *The Codebreakers*, author and cryptologist David Kahn has a final chapter on "Messages from outer Space" where he writes that proposals for how mankind should reply to such messages fall in to two main categories: replies based on mathematical logic and rely using pictures.³ If cereographs are "messages from outer space" I submit that their meanings may combine both of Khan's categories: that crop circles are symbolic depictions of fundamental properties of energy and matter about which any intelligence would have articulated knowledge and would expect other intelligence to have the same knowledge, though not necessarily the same articulation capability. Such a notion implies that we should think about cereographs as information, if only because literally they are "in-formed" into grain crop fields. We know that information has power to shape and exploit behavior, and some eminent and responsible physicists and biologists assert that the universe is best understood as consisting basically of information.⁴ This is not an easy concept to grasp but neither is the concept of homology and isomorphism that could underlie the prospect of an ETI communicating in the presence of a mankind trying to interpret the communication. While there are many possible universes, the one we have considerably restricts what thereafter is possible. In the Singularity that proceeds the big bang, time is non-existent. Time occurs only when the big bang initiates expansion, regardless of whether the current universe is open, closed or steady. It is this fundamental property of energy and matter that ETI most likely would understand, articulate and expect that other intelligence also would understand. Everything that we as humans and other life forms of earth do, say or imagine has a fundamental time component. Time is the ultimate reference, likely so everywhere and equally in our non-centered universe. ETI may measure time differently than we measure it (e.g., a "year" in ETI's solar system may not equal a 365-day year in ours, though it may be close given the limiting conditions under which intelligence is thought to evolve). To me it is inconceivable that ETI's most basic reference, like our own, would be something other than

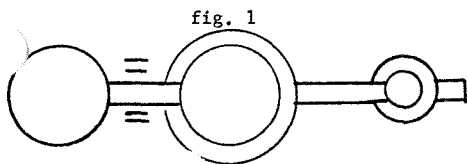
time. I will return to this point. To proceed to infer and deduce meaning from the cereographs, one first might establish a few basic assumptions. Suggested are these:

* The cereographs are discrete symbols (or signs) that carry and transmit information, but as symbols they are abstract.

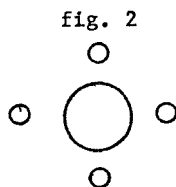
* The abstracted information of the cereographs concerns ideas about natural phenomena which, if they are made by ETI, are expected by ETI to represent universally unambiguous information.

* To the extent that the cereographs may be communicating one or more messages, those messages concern, from ETI's perspective, one or more of the following cultural subjects: interaction, association, subsistence, bisexuality, territoriality, temporality, learning, play, defence and exploitation. (These are Hall's ten primary message systems for all cultures.⁵)

Given those assumptions, I will next suggest a few semantic possibilities remembering that ETI should want to be fundamental and unequivocal. First, bisexuality: A cereograph



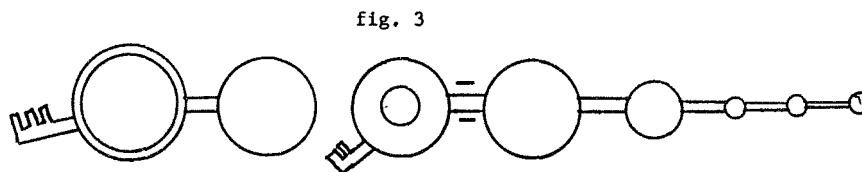
as in figure 1 might be that symbolizing a bisexual couple with a female child, or with a male child if my identities of sexuality are reversed. Next, exploitation: Here we may consider exploitation of matter and energy in the universe; for example, a cereograph like that represented in figure 2 may symbolize atomic structure, in this case that of beryllium



(Be) of atomic weight four. If this cereograph is representing beryllium, that is significant because the production and relative presence (or abundance) of beryllium in the universe is used to infer the initial versus the current density of the universe from which in turn comes information about the age of the universe, the system state of the universe and of

the operation or relevance of the second law of thermodynamics, i.e., entropy.⁶ All of those items of information are fundamental, pervasive and should be discovered and applied by all developed or evolved intelligences; all of those items substantially depend on and express the idea of time. The fact is that I have no way of knowing if cereographs like that denoted by figure 2 actually symbolize atomic structure as an intentional representation, but it seems to me that ETI would want to say something about atomic structure; it is fundamental and should be unambiguous.

Thirdly, territoriality: It is not unreasonable to me that some of ETI's cereographs are attempts to make stellar charts. Figure 3 might



indicate a binary star with orbiting planets. If figure 2 is not atomic structure, it might be symbolizing Lagrangian Libration Points. Along these lines of territoriality, a figure 4 representation may connote a planet with "rings" (by no means necessarily the planet Saturn in this solar system), and a cereographs as the one of figure 5 might symbolize a planet

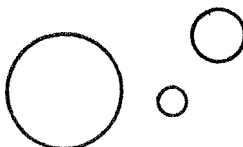
fig. 4



with satellites.

What about the primary message system for association? While both association and interaction can be implicit in the other eight primary message systems, ETI might associate some, to it striking, man-made artifice with another concept of another cereograph. Associations tend to be interrogatory, e.g., "if that, then this?" Suppose figure 6 is part of an association question by ETI where the

fig. 5



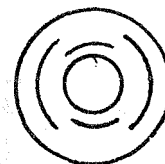
cereograph of figure 6 is ETI's way of representing a man-made edifice. Likewise, is figure 7 an attempt at association? ETI is unlikely to be esoteric or topological. The figure 7 cereograph may be an error or an incomplete symbol. ETI can make mistakes and probably can not erase.

Finally, temporality: Apart from atomic structure, if there are natural phenomena so basic that both we and ETI are about equally likely to know them, then two that come overwhelmingly to mind are: (1) the first and second laws of thermodynamics and (2) binaries. (The speed of light might be a third such phenomena but its measurement could be ambiguous as in miles per second or in

barleycorns per fortnight.)

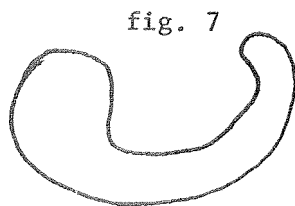
We do not yet know what are ETI's units of measure for time and distance, but the need to and act of measuring is doubtless universal. Initially understanding ETI's measures of time

fig. 6



and distance (time and space, if you like) is essential to cracking the cereographical code. If we can communicate back to ETI in fundamental semiological ways, we need to center on expressions of temporality. This will lead immediately to break-throughs as to distance, degree, relative motion, replication, specification and so on. Time is the spine and the audit trail of all other ideas. The most fundamental semantic principle is that of time and of change with respect to time. The system state of the universe produces time, and change in that system state underlies all other, secondary change over time. Bound up in this universal expression of time is the condition of order -- variously disorder -- of the universe that otherwise is entropy. Information about the condition of order in the universe is always binary. The fact and the act of computation on a binary basis is not limited to man-made electronic computers; the universe computes as do the

intelligences of it. I hazard that zero and one are the irreducibly basic numbers of matter and energy. I note also that binaries of any kind are expressed by the primary message systems of association and interaction. It is possibly that among ETI's most often made circles are those symbolizing zero and one.

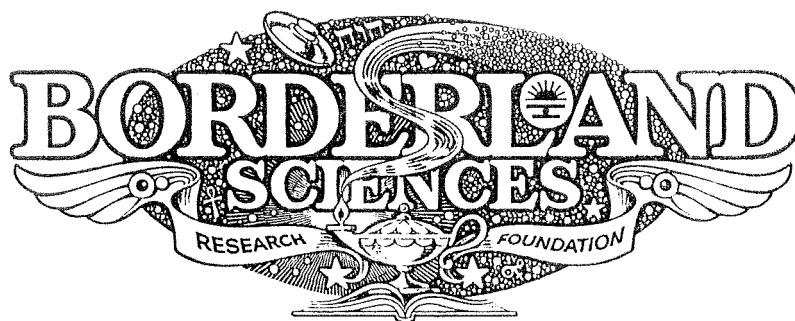


Why ETI should prefer circles may have nothing to do with π (pi) or spheres per se, but may be a function of ETI's instrument limitations. On the other hand the relationship of the radius of a circle to its circumference makes the strongest possible statement or computation about the system state of the universe as to whether it is negatively curved (open), positively curved (closed) or not curved (flat).⁷ At any rate, if we are looking for crop circles that symbolize ETI's information about the system state of the universe then such information surely represents change over time.

In sum I expect that when we can establish and interpret the elements of time as "informed" by crop circles, we will have made the break-through upon which others will hinge.

NOTES:

1. Carol Andrews, The British Museum Book of the Rosetta Stone (New York: Dorset Press, 1981), p.28.
2. Jack Vance, "The Gift of Gab," in Stanley Schmidt, ed., From Mind to Mind (New York: Dial Press, 1984) pp.53-93.
3. David Kahn, The Codebreakers (New York: The MacMillan Company, 1967), p.953.
4. A compelling, non-technical treatment of this proposition is in: Robert Wright, Three Scientists and Their Gods (New York: Harper and Row, 1988) in parts I-III.
5. Edward T. Hall, The Silent Language (Greenwich, CT: Fawcett Publications, 1959), pp.37. 44-61. 167. 171-176.
6. V.E. Viola and G.J. Mathews, "The Cosmic Synthesis of Lithium, Beryllium and Boron," Scientific American, vol.256, no.5 (May 1987), pp.39-45.
7. J. Richard Gott III, et. alii., "Will the Universe Expand Forever?," Scientific American, March, 1976 reprinted in Owen Gingerich, Cosmology + 1 (San Francisco: W.H. Freeman and Company, 1977), pp.86-89.



B.S.R.F. BULLETIN BOARD

A forum for BSRF members. Letters, ideas, newsclippings, and book/cassette/video review copies may be sent to BSRF, Box 429, Garberville, California, 95440 or faxed to (707) 986-7272. Unless otherwise noted, answers and comments are by the Editor-in-chief, Tom Brown.

NEUTRALIZING RADIATIONS

As a thoughtful and enthusiastic student — I have a question — could any work be done in this area: (or has some been done?):— on a device or force-field (1) or some sort of defense (deflection) for the human body — by diet, or currents — (metals?), (2) or a larger, "field" to protect a whole dwelling (3) from the harmful effects of the high-voltage (hi-rise) power lines that march across the land? I. Perhaps be "offsetting" the harmful results/constant repair of body — ? — or — II. Deflecting the harmful waves or III. Absorbing the ones that come to the dwelling itself (a means of "defusing", or neutralizing the harmful radiations — that come to your small area?)? i.e. If we moved into such a situation, could we protect ourselves from the harmful effects of it? This would be a good field of research for some qualified people to get into — we all need it — [maybe it could be done by properly "conditioning" the human force-field?]

Edna Swan
Crawford, GA

We'll toss this one out to our membership and see what information we can get back.

LUNAR QUESTIONS

Each of the APOLLO manned space flights to the moon carried an ALSEP, Apollo Lunar Surface Experiment Package. These "packages" contained 4, 5 or 6 different "experiments" which the astronauts "deployed" on the surface of the moon. At least one of these ALSEP "packages" included a "Lunar Surface Gravimeter Experiment". Do you have any information on the "Lunar Surface Gravimeter

Experiment"? Who was the scientific investigator that designed this experiment? And what ever became of him? Has he ever published any books, papers, etc. and are they available?

I worked at Bendix Aerospace in Ann Arbor, Michigan when this experiment was assembled and tested. The only thing I ever heard was that it was sent to the moon with the wrong weights installed. Since it was in part a "balanced beam" design, sending it to the moon with the earth weights installed would mean it would not function properly on the moon. I did not believe it then and I do not believe it now. Such a ridiculous tale as to the fate of their experiment has always rankled my senses.

Do you have any information on this experiment? Where in NASA would I inquire about this experiment?

Robert S Paul
Cleveland, OH

We don't have any current info on the ALSEP experiment, but it is not surprising that it was sent with "earth" weights on it. Readers of William Brian's MOONGATE: Suppressed Findings of the US Space Program (Future Science, Box 06392, Portland Oregon, 97306) are familiar with the many weight anomalies in the publicly released data on the Lunar missions. It is Brian's contention, supported with some very good evidence derived from NASA itself, that the moon has a gravity around 3/4 that of earth.

As for who to check with in NASA, just do some fishing. About four years ago I called various NASA offices asking the simple question -- what does it look like in space, what is the appearance to the eye of the sun and stars?

Amazingly I got quite different answers from each person, ranging from full black (no stars), to that the stars are brighter in space. Absolutely no white light photos taken in space of primary light sources (sun & stars) are available to verify any story! Check the catalogs yourself if you don't believe me. As I told one person in the public relations office: "NASA has been going to space for 25 years, doesn't anyone know what is going on up there?" If they do, they sure aren't telling.

MORE RIFE STUFF

In reading McCabe's book on Oxygen Therapies I was greatly interested in his discussion of Royal Rife's work with his super microscope and Frequency Generator. I also noted that you have a video-tape on his work and also some literature.

I have heard that several manufacturers are making alleged duplicates of Rife's Generator and that some of them are greatly inferior to the original. Do you know anything about this and do you have any experience with any of the modern versions? And, if so, have you been able to assess their merits? As I understand it Rife's machine did have substantial merit and I am interested in purchasing an authentic duplicate. Can you help me in this matter?

T. H., Ventura, CA

**** Please advise as to whether you have any titles with the actual electronic circuit diagram for the Dr. Royal Rife Frequency Generator used to electronically treat viruses and cancer by audio frequency square waves applied directly to the body, and the five frequencies needed for treatment? A manual written for the use of the device was written by John F. Crane in 1960. Apparently, something called the BSRF also had technical information at one time. From information in the December 1988 "Health Consciousness" magazine, I see that the 6V6 or 6AQ5 pentode vacuum figures in the design. Can you help?**

Ralph Hearn

Los Angeles, CA

We get too many letters asking about Rife Frequency Generators, indicating that fantastic stories travel further and faster than the truth. John Crane devised the square wave pulse generator approach from his understanding of Rife's work (he was a draftsman working for Rife, a friend and executor of Rife's estate.) Positive and negative results have been recorded from this approach, but it is definitely not what Rife was doing. However, Crane still has some of the original Beam Tube equipment and it is in use in a clinic in Mexico. We would suggest that

people interested in the original equipment contact Mr. Crane: 4246 Pepper Drive, San Diego, CA 92105, phone 619-2810278. Of the various modern units we have seen, including one donated to BSRF by Klark Kent of Super Science (Box 392, Dayton Ohio 45409), Klark's is the only one taking the beam tube approach. The gas bulb supplied with our unit is driven at about 150KC and modulated with the same single frequency generating device as is used in the Crane-inspired electrode treatment. Rife's bulb's were driven at much higher frequencies, and modulated with complexes of tones, as can clearly be seen in the various videos we have released on Rife over the last few years. Klark is experimenting with new bulb arrangements and different gas mixtures and we wish him the best in moving closer to the original equipment. If you see an add for a "Rife" device generating the "real scalar waves" then you can see how far this field has travelled from reality.

The article in Health Consciousness magazine (Box 550, Oviedo, FL 32765) titled *The Rife Generator Story* by Ed Skilling was a fine piece of science fiction that bore little relationship with the truth and is the root cause of the modern 'Rife' generator scam. We rejected it for publication years ago, but it is still making the rounds with the uninformed. Roy Kupsinel, Editor of *Health Consciousness*, does an excellent job of making info available and probably ran that one not knowing the truth of the matter.

We have also received information from a group in Dallas Texas who appears to have put out the best information available. They have published a book titled *The Rife Way III* and it is available from them for \$29.95, checks payable to Mark Simpson, Box 710088, Dallas, Texas 75371. This report is over 200 pages with photos, charts and other support-

ing documentation providing specific technical information on what Rife's work is really all about.

This journal is open to both the positive and negative results that people have had in their research and experiments with all of these variations on the theme.

TONES

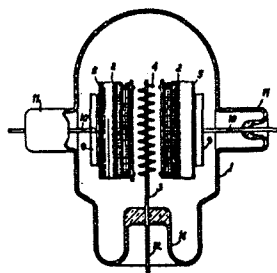
I am interested in the TONES.EXE computer software by Roberto Artigas. Please help me with the following questions: What are the hardware requirements/specifications for using this program? (IBM DOS 2.0 or higher) Are any enhancements or peripherals required? (No) Does this program produce round wave or square wave frequencies? (Probably square [on-off]) Is the program copyrighted; are there any licensing restrictions? (Yes -- contact on disc) What printed documentation/operating instruction is available with the program? (It is a very simple program. Instructions included) Also, is the program available on a 3 1/2" diskette? (upon request -- specify density) Is there an Apple Macintosh version available? (Not as of yet)

Thank you for helping me with this.

John M. Boesen, Wichita, KS

And I'd like to add that we'd appreciate any feedback from the people who have already acquired the TONES program. Here is a listing of Brain Frequency Research Findings for those many who have asked:

DELTA - 0.1 to 3 cps (cycles per second). The Delta level is normally associated with a deep, dreamless sleep, trance state and non-REM type of sleep;
1.0 cps -- Feeling of well-being; pituitary stimulation to release growth hormone; overall view of inter-relationships.



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THETA - 3 to 7 cps. The Theta level is associated with recall, fantasy, imagery, creativity, inspiration, future planning, dreaming, switching thoughts and drowsiness.

3.5 cps -- Feeling of one with everything; accelerated language retention.

5.5 cps -- Moves beyond knowledge to knowing; shows visions of growth needed.

6.3 cps -- Astral projection; accelerated learning and increased memory retention.

ALPHA - 7 to 13 cps. Alpha is associated with a non-drowsy but relaxed, tranquil state of consciousness, primarily with pleasant inward awareness; body/mind integration.

7.0 cps -- Mental and astral projection; bending objects; psychic surgery

7.5 cps Inter-awareness of self and purpose; guided meditation; creative thought for art, invention, music, etc.; contact with spirit guides for direction.

7.8 cps -- Earth resonance frequency.

8.0 cps -- Level for past life regression.

8.3 cps -- Pickup visual imagery of mental objects.

9.0 cps -- Awareness of causes of body imbalances and means for balance.

10.5 cps -- Frequency to go to for healing of the body; mind/body connection; firewalking.

12.0 cps -- Centering; frequency of earth resonance (from Hercules)

BETA - 13 to 30 cps. Beta is associated with outward awareness, the taking in and evaluating of various forms of data received through the senses; it is present with worry, anger, fear, hunger, and surprise.

13 - 30 cps -- Normal awakened state

HIGH BETA - 30 to 500 cps.

35 cps -- awakening of mid-chakras: balance of chakras

55 cps -- Tantric yoga: stimulates the kundalini

63 cps -- Astral projection

70 cps -- Mental and astral projection

80 cps -- Awareness and control of right direction

83 cps -- Third eye opening for some people

90 cps -- Good feelings; security, well-being, balancing

105 cps -- overall view of complete situation

108 cps -- Total knowing

120 - 500 cps -- PSI; moving of objects, changing matter, transmutation

Frequencies 1 - 13 cps: Are detached, objective observation.

Frequencies 13 - 500: Are involved, participation.

This listing is taken from the Tones program and was compiled by Roberto Artigas. Any Borderlanders who would like to add to, subtract from or further edit this list are most welcome. Working together we can compile a definitive list for further research.

MOBILE HOMES

As Ron Crossley of France pointed out in the last journal, Aluminum contamination from mobile homes & trailers is a serious problem. Having lived in Aluminum clad Airstreams & such for years, it took me some time to discover & partially remedy the problem. While the Polarizers like Webbs "Springlife" unit help a lot, it is still not quite enough to clean up the pollution constantly. One way that helps is to get the windows open & keep the circulation going constantly. In winter, the use of a wood stove actually helps suck up this pollution through the draft & smoke action.

A few inches of sand which had been treated with blue light helps the situation also. You put the sand in the corners of the rooms and cleanse it with water every week or so. Recently there were some "bug banishing cards" put on the market that seem to also work well in cleaning up interior pollution. These alloy cards have strange symbols on one side and were evidently given to the maker to aid in cleaning up the planet. (A longer tale that I'm sure will never get in print.) In any event I am still experimenting & hanging on to my poisonous Airstream trailer. Articles on the effects of aluminum in trailers have so far gotten rejected..by otherwise open minded editors. Considering the millions who have their health impaired through this danger, I hope that it gets more publicity. I am always happy to discuss such issues with interested persons.

Al Fry, HC 76, PO Box 2207

Garden Valley, IDAHO 83622

P.S. While most of the rivers in the country are so polluted as to keep away most of the cleansing undines or water spirits, I am fortunate to be in front of a river that still has a good population of them. In conjunction with the natural cleansing actions described by Schauburger, they help a final "fine tuning" action. By next year I hope to have a vortex water treatment device that will use the vortex principal.

IMPLOSION

Thanks for sending the book (Implosion). Very enjoyable. But the big question is; Are you aware of any efforts at constructing a Schauburger turbine??? If so, could you please inform me. Or any other contacts regarding this device? I find it hard to fathom why such a basically simple turbine is not being developed. I know the vested interests wouldn't like it but it shouldn't take "huge" money to do something. Del Unruh, Alberta, Canada

Walter and Rhetta Baumgartner have been

working for years on development of Schauburger technology, they can be contacted at: P.O. Box 493, Magdalena NM 87825, phone (505) 854-2634. They also publish a newsletter, CAUSES, which covers their research in this area.

ELECTROMAGNETIC SPHERES

About Larry Spring's theory on wave-propagation, I think one can reconcile the two facets (longitudinal and transverse waves) by thinking of the wave as an aligned series of spheres with alternate polarity by each half-wavelength. Remember that the common radio/TV broadcasters emit a form of MATTER in a state of dissolution and that this stuff must absorb ether from the environment as all matter does. Unlike the Tesla coil and/or Magnifying Transmitter which work with the ether directly! What the shape of the wave emitted by the TMT or even the Tesla coil is something yet open to inquiry and investigation for, in my opinion, it is not logical to translate one system onto the other for framing an explanation of the different phenomena.

And on Trevor Constable's Operation Clincher, it can only be said "He did it again!" It is impossible for me to add anything else. And Alison's article on Uranus and the Radioactive Metals is extraordinary, she left no stone unturned.

Jorge Resines

Buenos Aires, Argentina

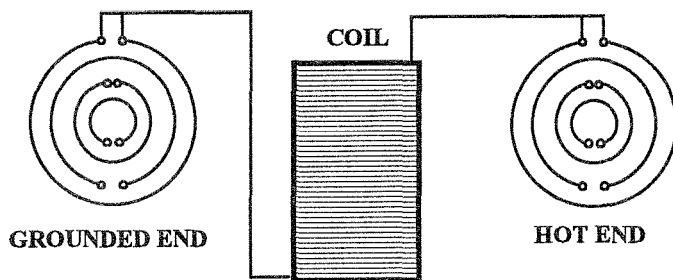
MWO RESEARCH

Five years ago I duplicated the MWO as best I could with my limited knowledge. I scaled up the antennae from the book Waves That Heal using copper tubing of all different sizes and soldering brass hex caps of various sizes on the ends after I rounded them off with a grinder. The outside ring was about 2 ft. across.

I was able to duplicate the exact brush discharge pattern in the picture with Tesla coil 4" diameter with about 1,000 turns of regular hook up wire. 500 turns gave a discharge of 2"-3" evenly all around the outer ring. 1,000 turns gave a discharge of 5"-6" at the bottom with less and less towards the top except for some off the two balls at the top, like in the picture.

I found it necessary to run two connections from the feed wire otherwise with one connection the spark would travel around the ring and out the other end burning anything used to suspend the ring. Two connections eliminated this problem forcing all energy towards the bottom of the ring like in the picture.

The resonator was grounded just like the Beck model to the ground end although



I used two wires — one going to each end of the outer ring. Even so, at this power you could draw a small spark off the outer ring and if you turned the unit off and on you could hear the resonator ring just like it was struck by a small hammer.

I used a 30mA 15,000 volt sign transformer or stronger. These tend to burn out unless you put the primaries of two in series to share the load and restrict current. Actually, I started using half burned out transformers using mid point ground and the good half for 7,500 volts which is much safer for the capacitors. I used 2 .005 uf 20,000 volt capacitors in parallel for .010 from Information Unlimited. The stationary spark gap was air cooled with a small blower fan.

There was no spark between rings. The side effects from this unit were too strong to continue treatments so I am now working on smaller units. After 15 minutes your head would be full of mucus. The closer the antennae were to each other the stronger the effect to the point of making one very nauseous.

Does anyone recommend Ed Skilling's new Mega Sound generator from E.L.F. Works? This small hand held device is the result of all his research over the years. I would like to know more about it and if anyone has benefited from it. Also, did anyone else purchase and test Dr. Charles T. Turley's square wave sound MWO — two printed antennae powered by a sound generator?

John Andrews
Akron, Ohio

Thanks for your most helpful input. A new edition of the Lakhovsky MWO handbook is in progress, including translations from the French explaining how his original instruments were powered, with schematics. Haven't heard from Ed Skilling for years, so don't know what he is working on. Would be most interested in Dr. Turley's MWO as it may very well relate to Lou Schad's spiral coil MWO, presented several issues back, which worked on physically vibrating the coil. Peter

Lindemann has picked up on this and is experimenting with vibrating the antennae with sound waves. A whole new field of MWO research is opening up and it sounds like Dr. Turley is working in the same direction.

LITHIUM RESEARCH

I am writing to inquire about the product "Aqualithia" — specifically — is the concentrated product still available for research?

I have had my "Trinity Pack" for several weeks now and am absolutely amazed at the almost immediate feeling of well-being and calmness I get while wearing it. I plan to order several more for gifts.

I am now experimenting with "Golden C" water — using only the words to charge it (I happen to be a "believer" in words) — and plan to try the grid to discover any effects, again using only the words.

Karin Wiesner,
Flagstaff, AZ

Aqualithia is still available for research from BSRF at \$25 per 1/2 ounce bottle, plus \$2 shipping and 7.25% state sales tax. For those who want to find out more about lithium research we recommend LITHIUM by Haroldine, \$9.95 plus P&H from BSRF.

RECEIVED

This is a listing of books, tapes and other materials received at BSRF HQ. If you wish to order any of these items then you must do so from the source listed. This is not a listing of items sold by BSRF.

* From THE RUDOLF STEINER RESEARCH FOUNDATION, P.O. Box 1760, Redondo Beach, CA 90278, phone 1-800-776-5438. A series of Steiner's lectures: Spiritual Science & The Secrets of the Liver; Secrets of the Liver and Kidneys; Prehistoric Animals & The Primeval Earth; Mystery of the Moon - How the Moon Was Once Inside the Earth; Sun, Moon & Earth - Paleontologic, Geologic, Human & Animal Hereditary & Reproductive Effects; Embryology & Adam

Kadmon; Illnesses & Mystery of the Subconscious; World Creation & Creation of Humanity (Saturn, Sun & Moon Epochs of Earth Evolution; Creation of Earth & Man: Prehistoric Animals & the Primeval Earth; How to Interpret Paleontology. All I can say is WOW! This is really some of the most fantastic information I have ever come across in this field. The world pictures built up in these lectures add so much to my understanding of the formative cosmic organism. I feel like I'm floating out of my body when I get into the images developed in these lecture tapes, and they stimulate my thought process to further process information from my own subconscious. Our many thanks go to Don Hosier for his work in researching his vast tape files and providing important research information on request. It has always amazed me that more people don't contact this source, comprising of a vast wealth of advanced information.

* THE ULTIMATE LIBRARY and CREATIVE INSPIRATION, two cassettes from The Changeworks, Box 5909, Bend OR 97708, phone (503) 382-1894. These tapes, which have received rave reviews elsewhere, are multi-evocation hypnotic tapes based on the work of Milton Erickson, M.D. To give this a proper try I chose a quiet space and time to work through the trance state. I tried the first tape, as it promised access to "Improved problem solving; help with decisions; access to information; and answers to questions." The tape started out with a computer voice which disturbed me on a hypnosis tape, but I decided to pursue the trance and see what this technique would bring. It went through the standard trance techniques of going deeper into the subconsciousness, but it was not as smooth as it easily could have been. The tape took me to a deep area of my subconscious where all the information I ever needed was supposedly stored. Then that computer started talking again with its irritating voice! I ripped the headphones off and came out of the trance. I don't have any computer in my deep subconscious and no one is going to hypnotise me into thinking I do, or even get me to use such a model for access to information (what would Giordano Bruno think?!). So I never made it to the second tape, which may very well have been much better suited to my temperament. No doubt these techniques can be used to enhance one's capacity for advanced endeavor, and I've listened to a number of different ones over the years, but somehow I didn't click with this one. I find listening to the lectures from the Steiner Foundation (mentioned above) to be amazing tools for the advancement of consciousness — they won't help you

lose weight or quit smoking, but they will provide first class knowledge.

* **HARMONIC BRAINWAVE SYNERGY** from Neurosonics, Box 611, Crystal Lake, IL 60014, phone (708) 639-8459. After my experience with the previous tape I wanted to bring myself back to harmony, so this looked like a good one to try. I've wanted to try these techniques, of which I've heard so much over the years. So I laid back down and settled in to have my brain harmonized. After several minutes of irritatingly mindless tonal drive I turned off the tape player and wondered what in the world is going on. I tried to listen further but couldn't. I regularly listen to works such as Bach's Brandenburg Concertos and works by Vivaldi. These works really harmonize the body, mind and soul. They are tremendously uplifting works that are musically based on natural structures. While this may not be a popular opinion, I still must say that I think that people who rely on electronically induced techniques to enhance their consciousness (including the entire field of brain machines and virtual reality) are being drawn into a synthetic subrealm, a mirror opposite of the life-positive forces available for enhancing consciousness and evolving the spirit. Where it will lead I don't know, and I certainly won't be there to find out.

* From **Emahmn**: Several issues back we listed some books received from Emahmn on the Tatwas, the basic elemental forms (square, circle, crescent and triangle, and ovoid) which interact with the consciousness, their use dating to antiquity. Emahmn has been gracious enough to send us another batch of his published materials! (Many thanks, kind sir). These books consist of pictures, to be colored by the individual as an exercise in consciousness, comprised of various arrangements of the Tatwas. These various arrangements are designed to stimulate the consciousness into desired patterns such as concentration, receptivity, leadership, creativity, meditation, scientific insight, etc. Really fascinating materials from a man who has made this work his life. The following is a listing of the latest received: **CELESTIAL GEOMETRY; THE SILVER THREAD; THE GOLDEN COCOON**—*A Magical Transformational Process for Overcoming Fear and Limitation*; **BOOK OF PROSPERITY; SVELTE; BONDS; BOOK OF CORRESPONDENCES**; and **SUPRAVISION** -- *The Complete Set of TATWA CARDS for Holistic Health, Self-Mastery and Maximum Utilization of Personal Power*. Also received are a number of colored Tatwa buttons which can be worn about to carry the energies with you, perhaps to create

transformation in motion.

This is all excellent material for people on the path of self discovery, and it is an art from the past, combining color therapy and radionics (for those who are aware that radionics goes beyond dials and rubbing plates). Well worth checking out. (An article from Emahmn is coming to a future Journal) There are more books available -- get his Book of Books (catalog). Emahmn, P.O. Box 31462, Raleigh NC 27622, phone (919) 781-9191.

* **EXPERIMENTAL MUSICAL INSTRUMENTS**, Volume VII, #2, September 1991, P.O. Box 784, Nicasio, CA 94946. \$3.50/single, \$20/year (six issues). A very interesting and well illustrated newsletter on the borderlands of music.

* **GRAVITY IS A PUSH** by Walter C. Wright, Jr., 732 Ohio St., Fairfield CA 94533, (ISBN 0-8062-1263-2, published 1979 by Carlton Press, NY). Walter came and visited BSRF HQ this September and he brought along one of his push-gravity models, specifically a model of how the tides operate. He asks the simple question: If the moon's gravity pulls the water up at high tide, then how come there is a high tide at the same time on the opposite side of the earth? His model is made with magnets (with which he relates a congruency with gravity via formulae worked out through experiment) and as the moon and sun are moved around the earth bulbs light up showing the type of tide. We all enjoyed his presentation so much we invited him to our upcoming conference, where he will set up many of his demonstrations. Walter does presentations to high school science classes, with many accolades from the students, but with a request from the education board that he not do it anymore! Walter also sends out a monthly newsletter to interested researchers.

* From **Rex Research**, Box 19250, Jean NV 89019: **The Philosophers' Stone: The Short Path**, a compilation of all the pertinent quotes from alchemical literature concerning the production of the PS. A most interesting document! Also: **The Schappeler Sphere: Prime Mover**, The SP was "a 10-inch steel sphere with internal copper coils and electro-rheological formula which produced power in the presence of a magnetic field." Mobius Rex has done an amazing job of compiling tidbits of lost information into file form. Certainly a major stop on your way to building a borderland library. \$2 for latest catalog.

* **EXOTIC PATENTS** from Conti Associates, PO Box 494, Armonk, NY 10504. This is a sourcebook containing the numbers and

descriptions of exotic patents which the reader can then track down at the US Patent Office. There is a section on innovative inventors. Also has partial listing of various organizations on the fringes of science (they missed BSRF!), but a few of the addresses are years out of date. \$20 cash or M.O. to Biagio Conti.

* **OTHER TONGUES, OTHER FLESH** by George Hunt Williamson (ISBN 0-914732-26-9), \$15.95. A reprint of this 1953 UFO classic from Brotherhood of Life, 110 Dartmouth SE, Albuquerque NM 87106

* **GIVE YOURSELF HEALTH!** -- *Thoughts, attitudes and Your Health* (ISBN 0-9925720-0-4, \$7.95); and, **HELP YOURSELF TO HEALTH** -- *Profiles of Healthcare Professionals and Alternatives in Healthcare* (ISBN 0-9925720-1-2, \$5.95); from Turning Point Press, PO Box 718, Issaquah WA 98027, both books edited by Scott E. Miners. The first title is a compilation of articles by Bernie Siegle, Deepak Chopra, and others on the forefront of the alternative healthcare movement, providing an interesting overview. The second title is "a simple guide to 'whole-person' health practitioners in the Seattle / Tacoma, Pierce / King / Snohomish County metro regions."

NEWS FROM THE BORDERLANDS... FLATTENED... An article in *The Economist*, Sept 14, 1991, was one manifestation of a worldwide effort to debunk the crop circle phenomenon. In the U.S. the TV "news" carried the story of Doug Bower and David Chorly who claim to have made all the crop circles by stepping on a board connected to ropes as they walked in circles, an obvious farce to those who have kept up with the phenomenon. Famous US commentator Charles Osgood likened the "true believers" in crop circles to holdout communists in the USSR and John Birch Society members in the US. This was followed by an attack on Uri Geller and psychic phenomenon in general by the stage performer James Randi. So manufactured fables make the international press, while the facts are kept from view. But why go through such effort to debunk the crop circles? Easy, it is a phenomenon that cannot be controlled or explained. UFOs can be explained as simply folks from another planet, but crop circles??? An article in the *Cerealogist*, No 2, Winter 1990, titled **A Carefully Planned Hoax** provides information that at least one crop circle hoax was performed by British Military Intelligence after worried high-level government meetings. Well, at least we know there are some exciting happening outside the plans of the "New World Order".

Second International Borderland Sciences Congress

The Reconnection of Art and Science

July 30 to August 2, 1992, Berkeley Conference Center
2105 Bancroft Way, Berkeley, California

An eclectic mix of researchers from many disciplines and areas of research.

Dennis Kloczek -- Keynote address, Dennis is the author of **Drawing From the Book Of Nature, and Weather and Cosmos**, and is the Science and Art instructor at the Rudolf Steiner College, Fair Oaks, California. He will give his insights on how the scientific methods of investigation developed by Goethe can be used as an impulse to evolve our world view.

Jennifer Greene -- Water - the Living Element, Jennifer is the director of Flow Research Labs, Blue Hill, Maine and is doing extensive work on water treatment using flow forms, and also uses the sensitive "water drop method" for testing water quality. She has a beautiful vision of life's relationship with water.

John Michell -- Crop Circles, John is the author of many books dealing with Sacred Geometry and Ancient Megaliths, including **The View Over Atlantis** and **The City of Revelation**, and is currently the editor of the Cerealogist, the newsletter of the Center for Crop Circle Studies.

Cleve Backster -- Biocommunication at the Cellular Level. Cleve is internationally renowned for his work in detecting plant reactions to external event. He is now working with the communication activity at the cellular level, and is sure to amaze you with his latest experiments. Cell cultures separated from a host body react at the same time as the host, regardless of distance!

Christopher Hills -- Science as an Artform, Christopher is the author of many books in the fields of subtle energy and consciousness expansion and has worked as both artist and scientist. He always provides an enlightening and entertaining presentation.

Duncan Laurie -- Ætheric Art, Duncan is an artist working in various media, especially sandblasted glass and radionic circuit boards, and is working on bringing understandings of evolved scientific concepts to the public through art

Walter Wright -- Gravity is a Push, Walter has been doing gravity experiments for years, and has built up many models backing up his claim that gravity is a push and not a pull. Experimental models will be on display for all to check out.

Gerry Vassilatos -- Lost Ætheric Technologies Rediscovered, Gerry is a high school science teacher and has been spending his summers scouring the Victorian science sections of various libraries. An experimentalist Gerry is sure to provide some astounding information that can be put to use.

Joan McKenna -- The Thermobaric Matrix. Joan is the director of the Institute for Thermobaric Studies and will present on her fascinating discoveries on the formative field of forces underlying all biological activities. The Thermobaric Matrix is the bridge between Eastern and Western medicine, and will bring about a revolution in the biological sciences such as genetics and medicine, as well as optimization of human life in general.

Larry Spring -- How to Measure the Size and Shape of Electromagnetic Energy, Larry is a persistant experimenter delving into the mysteries of energy propagation. He will report on his latest findings and present experiments to substantiate his claim that energy moves in spherical units. Experimental models will be on display for all to check out.

Paramahansa Tewari -- Physics and Technology of Space Power Generation, Dr. Tewari, a nuclear physicist by trade, is doing some of the most exciting alternative energy research on the planet. He will report on his latest over-efficiency results from his work with unipolar dynamos.

Peter Lindemann -- Procedures for Testing 'Free Energy' Machines - *Overunity* vs. *Overefficiency*. Peter is well known for his researches into radionics and BioCircuitry, and also into the physics of over-efficiency generator systems. In this presentation he will discuss various 'free energy' machines, and how to properly test the equipment parameters in order to discover what is really going on.

Mary Stone -- A System For Patterning Light Pathways to Improve Brain Functioning. Mary is taking children with learning disabilities, emotional behavior problems, and visual disfunction and is getting dramatic improvement in their conditions using a unique form of color therapy.

Jorge Resines -- Secret of the Schauburger Saucers, Jorge is the author of many books and articles on speculative science. He will give his proposals on the levitating qualities of water. He is also working on bringing a video of Dr. Jose Alvarez Lopez's experiments with him from Argentina

Michael Theroux -- Music, Archetype of Living Form, Michael is the managing editor of The Journal of Borderland Research and has done extensive research into the relationship between music, living form and the ætheric forces.

Bart Hopkin -- Bart is the editor of Experimental Musical Instruments, the Newsletter for the Design, Construction and Enjoyment of Unusual Sound Sources, and will demonstrate some of the latest innovations in this field.

Tom Brown -- Metamorphosis of Cosmological Awareness, Tom is the director of Borderland Sciences Research Foundation, and will present on his researches into the many world views developed by the diverse civilizations on earth, and will delve into the ramifications of evidence which supports world views different from those held by modern scientific research.

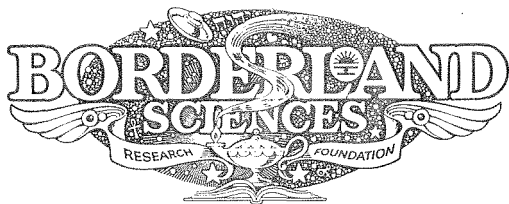
There will be displays of art and experiments from various presenters, providing a combined art exhibit and science fair atmosphere, and a bookstore and booths will be on site (and a few surprises!).

Lodging is at the Shattuck Hotel, 2086 Allston Way (Allston & Shattuck), Berkeley, California. Toll free reservation numbers are (in California) 1-800-742-8825 & (outside California) 1-800-237-5359, and ask for the special Borderland Congress room rates: \$65 single, \$75 double, which includes continental breakfast and overnight validated parking. (regular rates are \$82/single, \$97/double). Special rates on suites are also available. Regular phone number is 1-510-845-7300

We recommend lodging at The Shattuck Hotel as it is a fine hotel one block from the Congress site. Transportation is available from both San Francisco and Oakland airports, and there is easy access to all public transportation.

Congress is open to BSRF Members only! Members cost is \$175 for the entire Congress, a special rate of \$125 for early birds who sign up before January 30, 1992 (letter must be postmarked by this date to receive this rate -- no exceptions). Cost for non-members is \$200, which includes a one years membership fee.

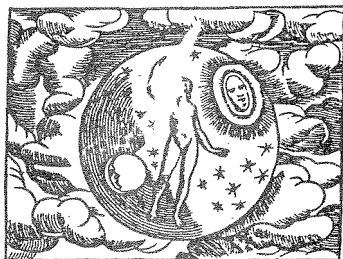
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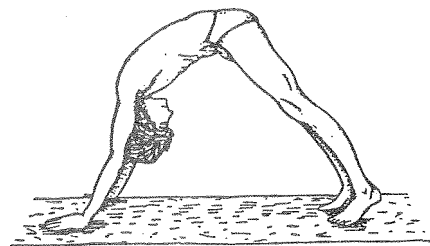
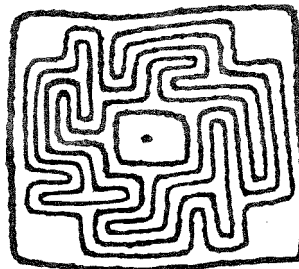
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MORE RESEARCH REPRINTS!

COUNTERPOINT: STRICT AND FREE by H.A. Clarke. As the contrapuntal songform embodies the spatial dimensions of living energy, this is a mustread for the researcher wishing to explore its nature and construction. This book not only lays down the rules for ancient or strict counterpoint, it goes beyond to explore what is termed modern or free counterpoint in great detail. Includes necessary instruction on double counterpoint, imitation, canon, and fugue. #B0127, 56pp, stapled. \$8.95

PRONOUNCING DICTIONARY OF MUSICAL TERMS by H.A. Clarke. This can be considered a companion volume to *Counterpoint: Strict and Free*. Like other dictionaries compiled at the turn of the century, this one contains much important information deemed obsolete by modern interpreters. Special features include: Meanings, derivations, and pronunciations of the English, Italian, German, and French words used in musical works; also the names, nationality, and the dates of birth and death of the leading western musicians of the eighteenth and nineteenth centuries. #B0128, 62pp, stapled. \$9.95

POSTAGE & HANDLING: Add \$2.75/first, 75¢/additional, Californians add 7¼% sales tax

All BSRF Members's orders on these titles postmarked before December 31, 1991 will receive a 20% discount off the retail price.