

Essential For Women – Your Body, Your Earth:

Grounding Your Rhythms

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What will the weather be like today?

Often one of the first things we do in the morning is check the weather, either by tuning in to the news on TV or radio, by looking out the window, or by stepping outside for a moment. The weather can make a big difference in your day.

But what about space weather? Sounds like something out of this world. Well, it is, and it isn't. Space weather can actually have huge effects on our lives. It can have vital health effects, especially for women. Learn about the fascinating details here.

Earth's Fields

Behind the world we can see with our senses lies a fantastic web of powerful but invisible energies and forces that affect us every moment of every day. These can be referred to as geophysical fields – the invisible energies of the Earth's gravity, magnetism, electricity and electromagnetism (light). Our knowledge of these fields has arisen from centuries of detailed study in a variety of scientific fields: biology, physics, geophysics, atmospheric physics, astronomy, astrophysics and cosmology. The cast of prominent scientific characters in this article is shown in the box. The reason their discoveries are so important is that none of the Earthly energies is constant – all of them vary in strength and direction from moment to moment. Whether you know it or not, your relations with these

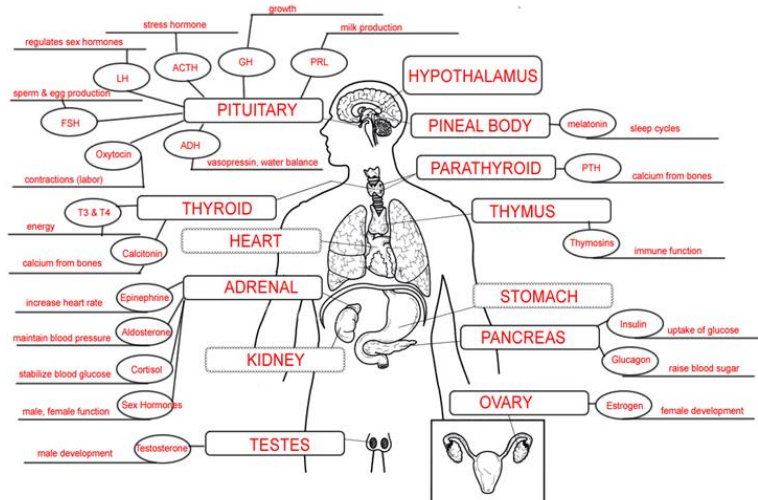
Cast of characters in the order of their appearance:

Thomas Huxley, English biologist
George Graham, English instrument maker
Anders Celsius, Swedish astronomer
Olof Hiorter, Swedish astronomer
Svante Arrhenius, Swedish scientist, 1903 Nobel Prize
William F. Petersen
Frank A. Brown, Jr., Northwestern University
A.S. Presman, Russian scientist
A.P. Dubrov, Russian biophysicist
Alexander Tchijevsky, Russian scientist
Raymond Wheeler, University of Kansas
Edward Dewey, economist
Buryl Payne, physicist/psychologist
Richard Feynman, physicist, 1965 Nobel Prize
W. O. Schumann, German physicist
Herbert L. König, German physicist
Jacob Israel Liberman, optometrist
George Leonard, American author
Wolfgang Ludwig, German physicist
Rütger Wever, German chronobiologist

geophysical rhythms are absolutely vital for your health. Human physiology has more than one hundred biological rhythms that are timed and coordinated with rhythms in your environment.¹

This article is especially for women because female physiology and reproduction are regulated by an array of hormones whose concentrations vary from moment to moment in relation to rhythmic changes in our environment. When your body rhythms are properly synchronized with your geophysical environment, you feel fine. When you become disconnected from the environmental pace-setting rhythms, your hormonal systems can become chaotic and can make themselves known to you with a variety of symptoms, some of which are very uncomfortable, and which certainly affect women much more than they affect men. If you ever experience any of the issues shown in the box, this article is for you. **We want to show you how the invisible silent pulses of nature give rise to normal hormonal regulations, how disconnect from the environment can disrupt these regulations, and how ridiculously easy it is to restore balance.**

- If you experience any of these symptoms, this article is for you:
- Irregular or abnormal menstrual periods
 - Bloating (water retention)
 - Breast swelling and tenderness
 - Fibrocystic breasts
 - Headaches (especially premenstrual)
 - Mood swings, irritability and depression
 - Weight and/or fat gain (eg. abdomen and hips)
 - Cold hands and feet (thyroid dysfunction)
 - Hair loss
 - Thyroid dysfunction
 - Sluggish metabolism
 - Foggy thinking, memory loss
 - Fatigue
 - Trouble sleeping/insomnia
 - PMS



An intricate web of hormones regulates a variety of organs and glands with widespread effects in both men and women. Any imbalance in this web can “fundamentally affect the whole body physiology and biochemistry.”^{2,3}

Our place in nature

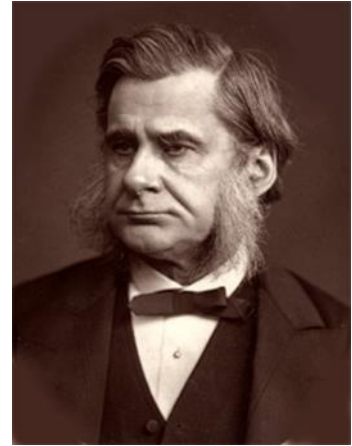
The question of all questions for humanity, the problem which lies behind all others and is more interesting than any of them, is that of the determination of our place in nature and our relation to the cosmos.

~T.H. Huxley (1863)

Thomas Henry Huxley (1825 – 1895) was regarded as "the premier advocate of science in the nineteenth century for the whole English-speaking world."⁴ His most famous work was entitled *Evidence as to Man's Place in Nature*.⁵ Huxley vigorously asserted that to understand the universe

and ourselves, everybody must know their place in the natural world. We shall see that this concept is even more important today as it was in 1863, as it has immediate significance for our health, particularly for women.

We firmly believe that the information in this article is so important that it could be the most important article any woman can ever read! This is a bold statement. We predict that if you read through the article you will agree.



Thomas H. Huxley
1825 – 1895

At a fundamental level, this article is about our quest to blend in and harmonize with ourselves, with one another, and with our environment, to keep our immune systems and all of our cells and tissues and organs functioning optimally, and to live long and healthy and happy lives. You will learn here that your environment, especially your electrical environment, is vitally important in ways you probably never realized. The article is based on a series of studies describing the wellness benefits of contact with the surface of the Earth, as in walking barefoot in the grass or on a wet beach. The importance of the discoveries in this area cannot be over-stated. **This article summarizes vital information that we all need to understand and apply every day.** The story is so fantastic that we have provided footnotes to the key points so that the reader can verify them.



It is obvious that all living things regulate their activities in harmony with the day-night cycle. When the sun comes up, humans and myriad creatures everywhere begin their daily activities, only to begin to slow down as the sun sets.

Gravitational effects from the moon and sun create oceanic tides that regulate the activities of all life in the sea. As days get longer in the spring, plant life emerges from the Earth,



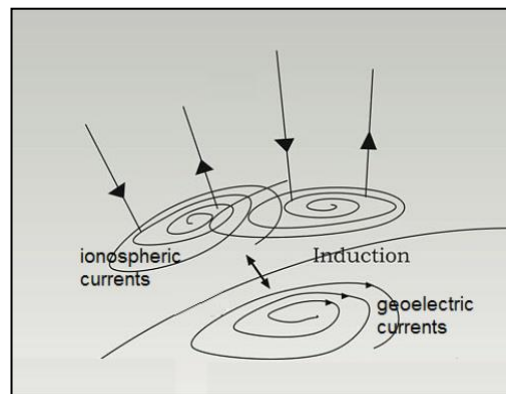
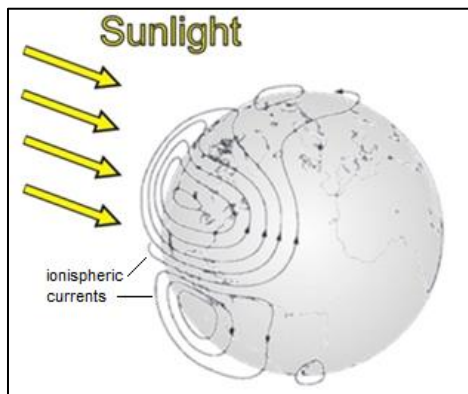
beginning the natural progression from seeds to stems, branches, leaves, buds, fruits, flowers, and back to seeds for the next cycle. The result is the regular progression of life through its many orderly stages, in harmony with earthly and celestial rhythms.

Less obvious and less known are other more subtle natural pulses that are also involved in regulating our internal physiological clocks. For example, most people know about the ocean tides produced by the gravitational pull of the sun and the moon. The forces these bodies exert on the Earth are continually changing. You can verify this if you have a smartphone, using an app called iEphemeris, which shows the distances between the Earth and the Moon and between the Earth and the Sun on a second-by-second basis with an accuracy of 1/1000 mile. As this article is being written, the distance to the sun is steadily increasing by one mile about every 12 seconds as we approach mid-summer (aphelion).

Less known is the fact that the gravitational rhythms of the sun and moon also produce tides in the atmosphere. The outer surface of our atmosphere is electrically charged by the sun, forming a layer known as the ionosphere, which “breathes” up and down with each lunar and solar cycle. Huge electrical currents circulate in the ionosphere, inducing swirling flows in the conductive layers at the Earth’s surface. These are called telluric currents, and have been widely studied. And the voltage between the ionosphere and the surface of the Earth creates an electrical field that varies in strength from moment to moment. When we stand barefoot on the Earth, our bodies are influenced by these electrical fields and the rhythmic information they convey to our physiology about both local and distant meteorological, geophysical and celestial phenomena.

How do trees know it is spring?

Phytochrome is a pigment found in most plant leaves. It is a photoreceptor that plants use to detect light. It is sensitive to the red and far red parts of the visible light spectrum. It acts like an internal hourglass. As spring approaches and days become longer and nights shorter, the phytochrome in a plant signals that it is time to flower, germinate seeds, and/or jump-start the synthesis of chlorophyll. So we must give phytochrome credit for the greening of leaves and the buds that pop in the spring, providing places for the birds to build their nests, and all of the other exciting glories of springtime.



Electrical currents produced by the solar wind circulate in the ionosphere, inducing swirling flows in the conductive layers at the Earth’s surface called geoelectric or telluric currents. And the voltage between the ionosphere and the surface of the Earth creates a substantial electrical field between our feet and the tops of our heads.

Skeptics can relax – this is not a new-age effort to prove astrology. Instead, we are summarizing well-established science from a variety of scholarly disciplines. We believe the discoveries in these fields are fascinating, and that some aspects will surprise you and will help you have a healthier, happier, more comfortable, and longer life.

This article is based on a series of studies describing profoundly important wellness benefits of direct skin contact with the surface of the Earth, as in walking barefoot in the grass or along a beach, or from living inside a building while in contact with conductive materials connected to the Earth. It is the story of subtle but extremely important electrical effects on our bodies.

Some teachers of ancient practices such as Yoga and Qigong recommend that all exercises be done barefoot on the earth. There is even a Barefoot Runners Society:

*“Wearing footwear as often as we do in our culture, we insulate ourselves from many pleasant tactile experiences, and foreclose memories of how places feel underfoot.”*⁶ There is no comparison between walking, running, or exercising indoors and doing the same activities while in barefoot contact with the earth. Women who work barefoot in the garden or walk shoeless along the beach are familiar with the special sense of wellbeing just from direct skin contact with the Earth’s electrical field.

Why should this be the case?

The significance of barefoot contact with the earth has been known since ancient times in aboriginal peoples living close to the Earth. For example, Native American elders discussed this in their traditional story telling:

It was good for the skin to touch the bare earth, and the old people liked to remove their moccasins and walk with their bare feet on the sacred Earth ... they sat on the ground with the feeling of being close to a mothering power... the soil was soothing, strengthening, cleansing and healing.

~Luther Standing Bear (1868-1939) Sioux Tribal Leader⁷

Throughout history, humans either walked barefoot or with conductive footwear made of animal skins (e.g. moccasins). They slept directly on the Earth or on animal hides. Our recent research confirms the health advantages they achieved with this lifestyle, and provides a detailed explanation of the wellness benefits.

Stated simply, one of the best things a person can do to lessen the likelihood of developing a chronic disease is to spend at least part of their day connected to the earth. Going outside barefoot is one way to do this. Another is to place a grounding sheet on one's bed and a third way is to have a grounding mat under one's feet while sitting. These are very simple, seemingly trivial alterations in one's lifestyle that can have profound wellness implications.



Through direct contact or through animal skins made moist by perspiration, used as footwear or sleeping pads, the Earth's abundant free electrons and geoelectrical rhythms were conducted into their bodies, which are also electrically conductive. By this mechanism, every part of their bodies, every molecule, cell, tissue, and organ, was exposed to the rhythmic fields of the earth, stabilizing the electrical environment of all parts, and providing a key ingredient needed for the operation of energy metabolism and the immune system: Earth's electrons.

Until the 1950's, most people continued to maintain this important relationship with the surface of the earth because the soles of shoes were made of leather, comparable in conductive properties to moccasins or animal hides in terms of connecting to the Earth.



Unexpected consequences of the age of plastics

For those living in the industrialized world, a big change took place in the 1950s when we began to wear shoes with insulating rubber, plastic or composite soles, instead of the traditional leather soles fashioned from animal hides. Due to their relatively low cost, ease of manufacture, versatility, and imperviousness to



water, plastics began to be used in an enormous and expanding range of products, from paper clips to automobiles to spaceships and airplanes. Soon plastics displaced many traditional materials,

such as wood, stone, horn, bone, leather, paper, metal, glass, and ceramic, in many of their former uses.

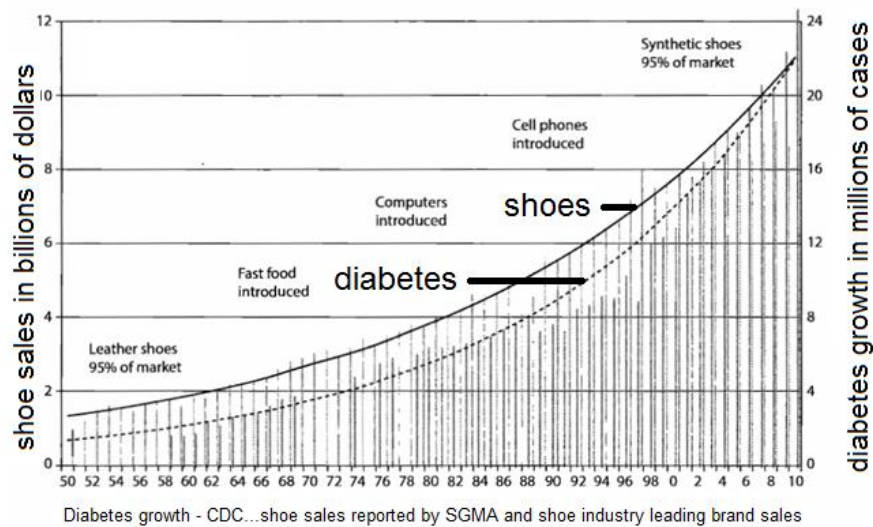
Some insightful individuals warned that the use of insulating materials for shoes might separate us from the Earth's energy fields. But the cost savings provided by modern synthetics gradually shifted the lifestyles of most people away from contact with the Earth, to the point that most of us rarely touch the soil. In 1950, 95 % of shoes had leather soles; by 2010, 95 % of shoes had synthetic soles. Other lifestyle changes during the “plastics revolution” included the introduction of fast-foods, computers, and cellular telephones. People moved indoors to watch television and eat pre-packaged food. Skin contact with the surface of the earth became rare. During the same period there was a dramatic decline in public health.

Diabetes and other chronic diseases

During period when plastics were taking over for the design of shoes, stress related chronic illness, immune disorders and inflammatory diseases increased steadily. At the present time, auto-immune disorders are the fastest rising pathologies. However, the possibility that wearing plastics on our feet might be linked to chronic or auto-immune diseases was never considered by modern biomedicine or by researchers in the field of public health. Our current investigations are definitely pointing in this direction. For example, we are experiencing a global epidemic of diabetes, a condition triggered by inflammation. There are compelling reasons to suspect that this epidemic and increases in other chronic diseases are partly related to our loss of contact with the surface of the earth. We have graphed the escalating incidence of diabetes along with the growth of sales of athletic shoes, virtually all of which have insulating rubber or plastic soles.

We have reached the point where diabetes accounts for 10% of all health care dollars spent.⁸

The world is losing the battle against diabetes as the number of people estimated to be living with the disease soars to a new record of 382 million this year, medical experts said on Thursday. The vast majority have type 2 diabetes - the kind linked to obesity and lack of exercise - and the epidemic is spreading as more people in the developing world adopt Western, urban lifestyles. The latest estimate from the International Diabetes Federation is equivalent to a global prevalence rate of 8.4% of the adult population and compares to 371 million cases in 2012.⁹



In the early 1950's, most visits to physicians were for infectious diseases, injuries, or pregnancy. Sixty-five years later, visits to physicians are predominantly for pain, stress and chronic diseases. Moreover, millions of Americans cannot sleep well, adding enormously to their chronic stress.

Voluminous current research firmly establishes connections between inflammation and virtually every chronic disease, including all of the diseases of aging.

A search for “inflammation” in the National Library of Medicine database (PubMed) reveals over 500,000 studies, with more than 36,000 published in 2015 alone. Chronic disease is the most common cause of death and disability in the United States. Seventy-five percent of the nation’s health care spending, which surpassed US\$2.3 trillion in 2008, is for treating chronic disease. Heart disease, cancer, stroke, chronic obstructive pulmonary disease, osteoporosis, and diabetes are the most common and costly inflammatory chronic diseases.¹⁰ Others include asthma, Alzheimer’s disease, bowel disorders, cirrhosis of the liver, cystic fibrosis, multiple sclerosis, arthritis, lupus, meningitis, and psoriasis. Osteoporosis affects about 28 million aging American.¹¹ Autoimmune disorders are rampant, and the reasons for this are unknown to the medical community. It is estimated that up to 3%–5% of the world’s population is affected by at least one disorder that results from autoimmune conditions¹² and the incidence of many of the autoimmune diseases has been growing steadily in recent decades.^{13,14,15} It is estimated that autoimmune-related disorders are the third (after cancer and atherosclerosis) cause of mortality and morbidity in developed countries.¹⁶

This article is based on a series of studies documenting the wellness benefits of direct contact with the surface of the Earth, as in walking barefoot in the grass or sleeping on a bed sheet containing electrically conductive fibers connected to the Earth.



One of the first studies demonstrated improved sleep associated with normalization of the day/night rhythm of cortisol, known as “the stress hormone,” after sleeping grounded for 8 weeks. The effects of grounded sleep on melatonin levels were studied as well, because melatonin is the most important of the hormones secreted by the pineal gland. Melatonin levels are extremely interesting and important because melatonin regulates sleep and a variety of other hormonal rhythms, supports the immune system, slows cell damage and aging, improves energy metabolism and may even inhibit the growth of cancer cells. Melatonin increased in 66% of subjects after sleeping grounded for 6 weeks.

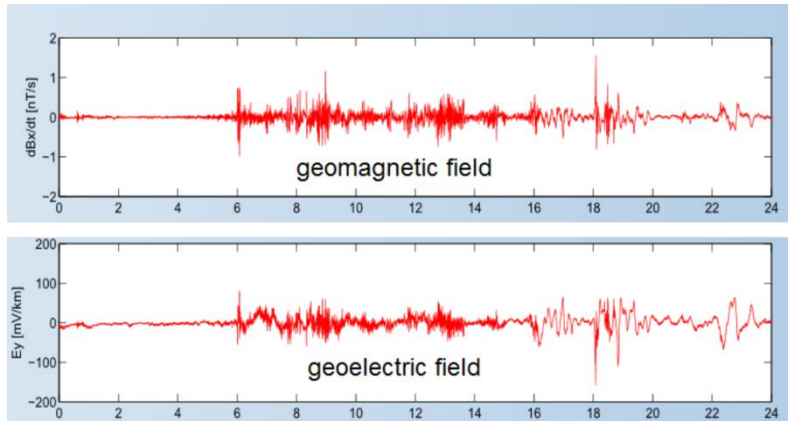
Hundreds of women have reported that Earthing/grounding resolves a wide variety of issues, such as:

- Irregular or abnormal menstrual periods
- Bloating (water retention)
- Breast swelling and tenderness
- Fibrocystic breasts
- Headaches (especially premenstrual)
- Mood swings, irritability and depression
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- Cold hands and feet (thyroid dysfunction)
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- Thyroid dysfunction
- Sluggish metabolism
- Foggy thinking, memory loss
- Fatigue
- Trouble sleeping/insomnia
- PMS

These observations, suggesting a relationship between grounding and levels of two major hormones, cortisol and melatonin, are evidence for a significant relationship between the Earth’s subtle geoelectrical fields, physiology, and wellness. Cortisol and melatonin are major parts of an intricate web of feedback processes that regulate a variety of endocrine secretions and glands with widespread effects. An imbalance in these systems can “fundamentally affect the whole body physiology and biochemistry.” Hence it is not surprising that hundreds of women have reported that Earthing/grounding resolves a wide variety of issues, such as those shown in the box. This article is about optimizing our relations with geophysical fields to avoid those issues.

Geophysical fields

Life on Earth involves constant exposure to several kinds of energy fields that can be very beneficial under the right conditions. Widespread beliefs and many textbooks have incomplete and inaccurate pictures of these fields. For example, it is often stated that gravity is a constant force pulling us toward the center of the Earth. Actually, the strength and direction of the gravitational field vary from moment to moment and

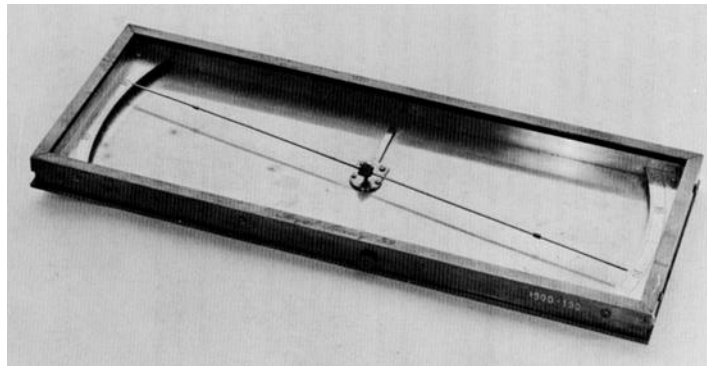


The electric and magnetic fields of the Earth are coupled to each other, and they are not constant. This shows up most dramatically when there is a geomagnetic storm, as shown here.

from place to place on the Earth's surface. There are three major causes: rhythmic variations in the positions of the Sun, Moon, and larger planets; variations in the density and other properties of the Earth's crust from place to place; and the centrifugal influence of the Earth's rotation, which makes us a little bit lighter at the equator. These effects also influence the oceanic and atmospheric tides as mentioned above.

Likewise it is widely believed that the geomagnetic field always causes a compass needle to point toward the North Pole. Actually, close observation of a compass needle reveals that it changes direction from time to time and place to place.

In 1722 the renowned London instrument-maker George Graham (1673-1751) constructed compasses with 12.2 inch long needles with finely-pointed ends. The needles were placed in brass boxes covered with ground glass. The boxes were wide enough to allow 20° of swing either way. At each end of the box graduated arcs could be read with a hand lens with an accuracy of 2 minutes of arc (angles are measured in degrees, minutes and seconds of arc).



In 1722 Graham noticed that his horizontal needles experienced small daily oscillations. In the course of over a thousand observations made between February and May 1772, Graham noted swings 'upward of half a degree' in one day, sometimes within a few hours. By observing at frequent

intervals throughout the day, a regular daily (diurnal) change was apparent. Graham published an account of his experiments in the Philosophical Transactions of the Royal Society in 1774.

Graham's results were confirmed by Swedish astronomers Anders Celsius (1701–1744) and Olof Petrus Hiorter (1696–1750) in Uppsala, Sweden. On a clear night of March 1, 1741, Hiorter noticed a large oscillation of the needle, through several degrees, in synchrony with the northern lights or aurora borealis. Celsius and Graham began to collaborate and discovered that large compass variations occurred simultaneously in Uppsala and London. The interactions between the geomagnetic field and the aurora borealis demonstrate the linking of the Earth's electric and magnetic fields with solar activity. The aurora is thought to be caused by both electromagnetic and electrostatic waves similar to the currents generated by an electric battery. Currents in the Earth's crust are introduced by the auroras. This was first demonstrated during a telegraph conversation over the American Telegraph line between Boston Massachusetts and Portland, Maine on the night of 2 September, 1859. The conversation between the two operators continued with the power supplies switched off, with the only power source being electric fields induced into the Earth's crust by the aurora.¹⁷

Variations in the Earth's electric and magnetic fields are caused by a wide range of terrestrial and extraterrestrial factors that we have listed in the box and illustrated on the next page. Remember that magnetic and electric fields are continuously coupled.

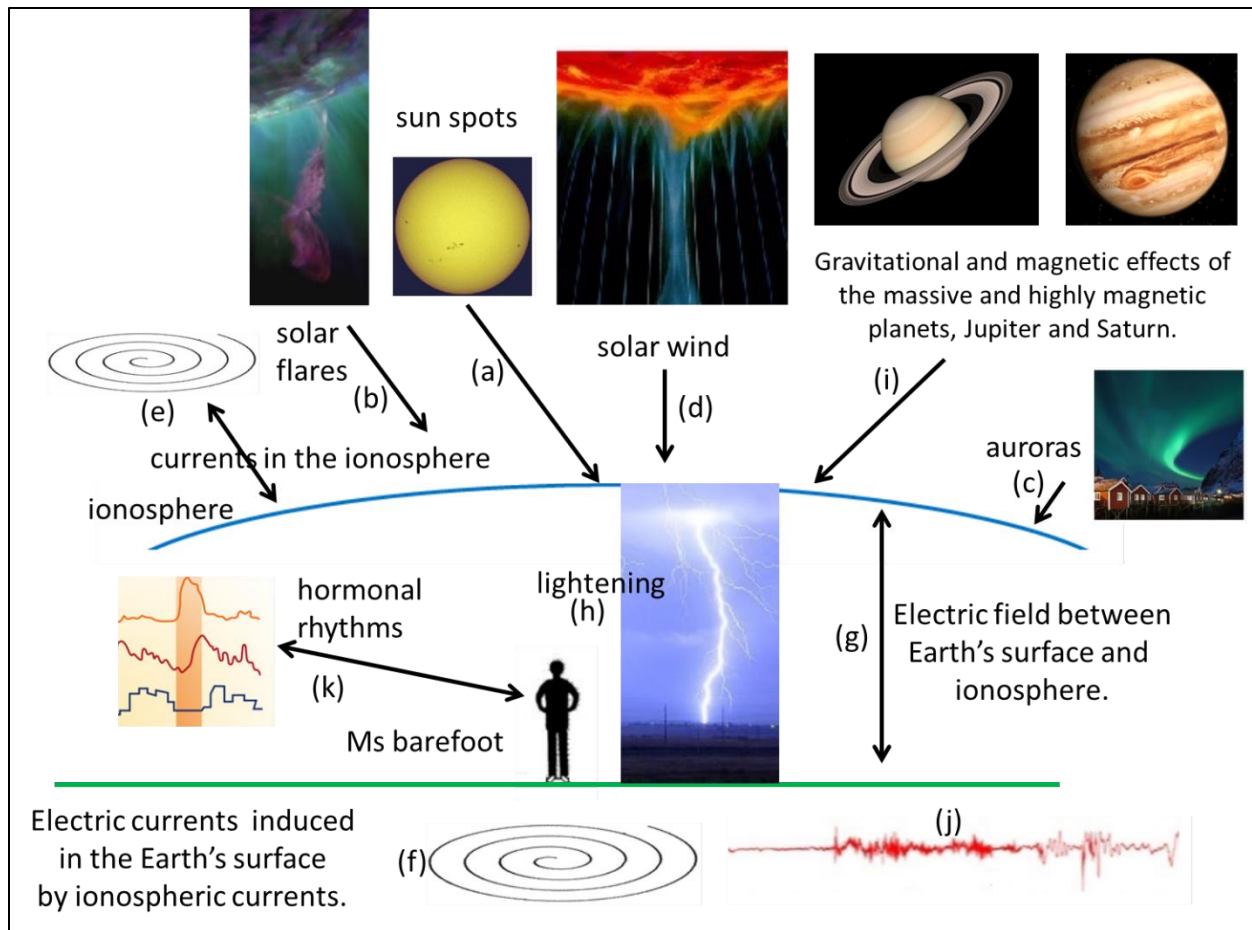
A film on the web shows how compass readings have changed between 1590 and 1990. The variations have been recorded at magnetic observatories around the world. Over 400 years, magnetic declination has varied over tens of degrees. Note in the animation how the positions of north and south poles have drifted over time.

- atmospheric tides
- local variations in the magnetic properties of the Earth's crust
- influence of highly magnetic planets such as Jupiter, whose magnetic field is 19,519 times that of the Earth, and Saturn, whose magnetic field is 578 times that of the Earth
- Events taking place on and within the Sun
- Rotations of the sun
- Lunar position
- Solar flares and plasma clouds expelled from the Sun
- Currents in the ionosphere
- Auroras

https://en.wikipedia.org/wiki/Geomagnetic_secular_variation#/media/File:Earth_Magnetic_Field_Declination_from_1590_to_1990.gif

In other words, the strength and variation of the Earth's fields contain information on a variety of geophysical, astrophysical and cosmological phenomena.

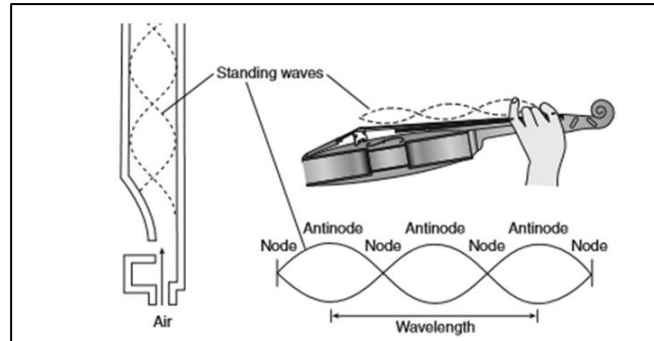
Solar flares can lead to changes in both the geomagnetic and geoelectric fields of the earth. During times of heightened space weather, intense solar flares and associated plasma clouds are expelled from the Sun. Known as coronal mass ejections (CMEs), these magnetic clouds sometimes head directly towards the Earth, hitting the Earth's magnetosphere around 1-3 days later. This can result in a geomagnetic storm.



A summary of the terrestrial and extraterrestrial phenomena that are continuously varying and that introduce constantly varying electric fields into the person who stands barefoot on the Earth. Sunspots (a) produce solar flares (b) that can create geomagnetic and geoelectric storms in the ionosphere. The northern lights or aurora borealis (c) arise from electrical charges coming from the sun. Electrical currents produced by the solar wind circulate in the ionosphere (e), inducing swirling flows in the conductive layers at the Earth's surface called geoelectric or telluric currents (f). And the voltage between the ionosphere and the surface of the Earth creates a substantial electrical field between our feet and the tops of our heads (g) if we are wearing shoes. Lightning (h) introduces electromagnetic signals that bounce back and forth between the surface of the Earth and the Ionosphere. This results in a continuously varying field known as the Schumann resonance. The massive and highly magnetic planets, Saturn and Jupiter, influence tides in the atmosphere (i) and, in turn, influence the currents flowing through the crust of the Earth. All of these influences add together to produce a time-varying electric field (j) that will enter the body of a barefoot person and adjust their biological clocks (k).

Watch incredible videos of solar flares at https://en.wikipedia.org/wiki/Solar_flare

The scientific explorations just summarized explain how solar and celestial events influence the geoelectric and geomagnetic fields in which our bodies are immersed. The magnetic variations can be detected by tiny magnetite “compasses” in our heads and brains and by quantum effects.^{18,19} The electric variations are superimposed on the electric field between the surface of the Earth and the ionosphere. One of the main links in this interconnected web of electrical effects is the Schumann resonance.



The Schumann Resonance - a matrix of information

Have you ever stood in a hallway or stairwell or a large room and noticed that your voice is creating a sort of echo or reverberation? You are creating standing waves. In physics, a standing wave is caused by the addition of two waves traveling in opposite directions. The most common examples of standing waves are provided by musical instruments such as organ pipes or violin strings. Waves traveling in a pipe or along a string will reflect back when they reach the ends. The back and forth waves add together to create a resonant tone or frequency that is characteristic of the geometry of the space. The illustration above shows the transverse waves on a violin string, and the standing waves in an organ pipe. Pressing a guitar or violin string against different regions on the fret or fingerboard changes the effective length of the string and therefore the resonant frequency of the standing waves that can be produced.

This part of our story has been dramatized in a documentary film by James Russell entitled “Resonance – beings of frequency.”²⁰ From the trailer for the film:

I have something to tell you.

Something incredible!

Something you are going to find hard to believe.

You have a connection to this planet.

A very real connection!

A connection in the form of a frequency!

And you have had it your whole life.

It's invisible to the human eye.
 But has been measured in Science for more than 60 years!
 In fact, it's being measured right now.
 When the connection is broken you suffer.
 It affects your physical health.
 Your emotions, your ability to fight off disease, your sense of well-being!
 When the connection is restored, so are you.
 This is something you share with every human being on the planet.
 Something that has been there since the beginning of time!
 Something you need to know because your connection is being lost.

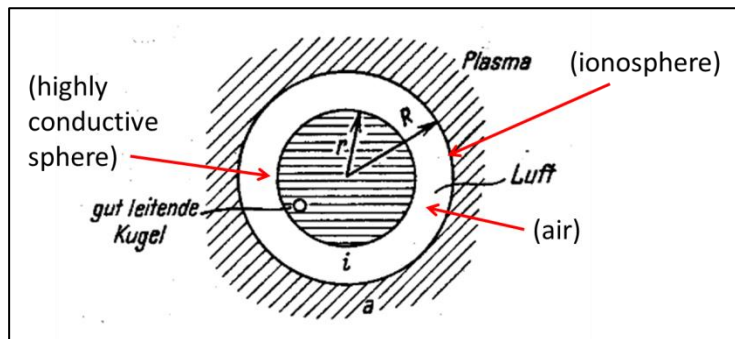
In 1952, the German physicist Professor W. O. Schumann of the Technical University of Munich predicted that electromagnetic standing waves would be established in the atmosphere, within the giant resonant space between the surface of the earth and the ionosphere.



W.O. Schumann
1888 –1974

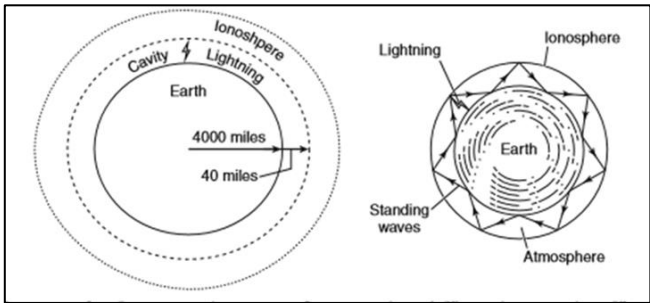
This “discovery” came about while Schumann was teaching his students about the physics of electricity. During one of his lessons he asked his students to calculate the resonant frequency of the “cavity” between the charged surfaces of the earth and the ionosphere. They came up with a calculation of 10 cycles per second (abbreviated as Hz). This was confirmed in 1954 when measurements by Schumann and his colleague, Herbert L. König detected resonances at a main frequency of 7.83 Hz.²¹

The space or cavity between the ionosphere and the Earth’s surface is used in wireless information transfer over long distances. Radio signals bounce back and forth between the two surfaces. This ‘skip’ phenomenon has been widely studied because it is the basis for long distance radio communication. Similarly, cloud-to-Earth lightning bolts “pump” energy into the cavity, creating standing electromagnetic waves that travel around the Earth at the speed of light, circumnavigating the entire planet on average 7.86 times per second. A person standing on the Earth at any point will be exposed to these Schumann frequencies. To use physics terminology, lightning



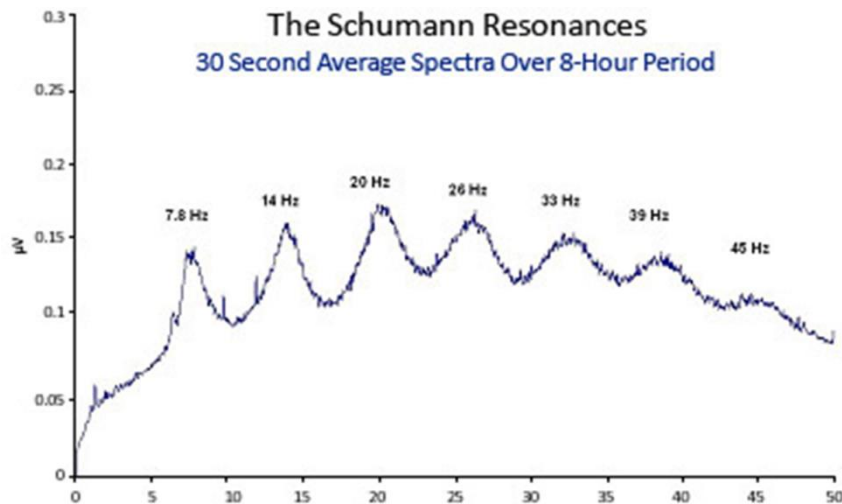
Original sketch by Schumann for the waveguide formed by the highly conducting earth and the highly conducting ionosphere (plasma). “r” signifies the earth radius and “R” signifies the radius of the ionosphere..

“pumps” energy into the earth – ionosphere cavity, and causes it to vibrate or resonate at frequencies in the extremely low frequency (ELF) range. At the same time, lightning bolts bring electrons from the ionosphere to the surface of the Earth. Multiple lightning strikes produce complex standing waves. These can be seen in an excellent animation provided by the National Aeronautics and Space Administration (NASA).²²



Multiple lightning strikes produce complex standing waves between the surface of the Earth and the ionosphere, from a NASA animation of the Schumann resonance.¹⁸

Just as organs use pipes of different sizes to produce different notes and different frequencies of standing waves, the frequency of the Schumann resonance varies as the ionosphere “breathes” in and out due to the atmospheric tides. Just as a musical instrument produces harmonics or overtones, the Schumann resonances can be observed at around 7.8, 14, 20, 26, 33, 39 and 45 hertz, with a



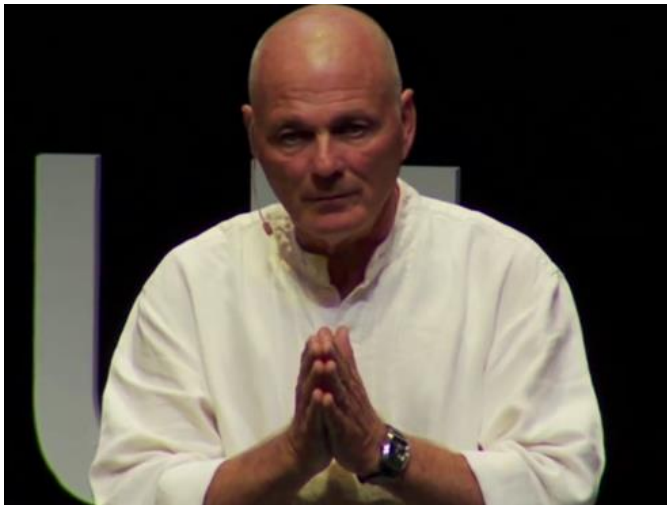
of daily variation of about ± 0.5 hertz, which is caused by the daily increase and decrease in the ionization of the ionosphere due to variations in ultra-violet radiation from the sun.

A number of scientists have recognized the similarity of the Schumann signal and the alpha brainwave measured with an electroencephalogram.²³ It has been suggested that the Schumann resonance has been ingrained into all life. A number of biologists have concluded that the frequency

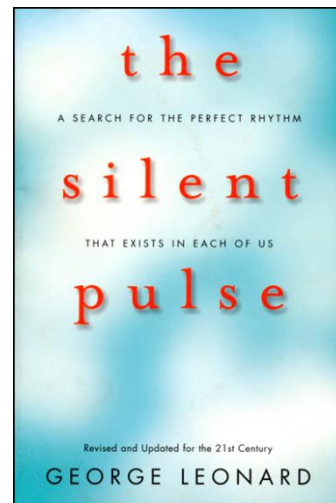


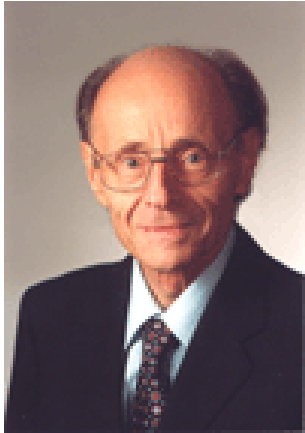
A Schumann signal compared to an alpha brainwave measured with an electroencephalogram.

overlap of Schumann resonances and biological fields is not accidental, but is the culmination of a close interplay between geomagnetic and biomagnetic fields over evolutionary time. While such concepts may seem farfetched, there is a growing body of scientific evidence that these frequencies have profound health effects. Because this global rhythmic pattern is virtually identical to the human alpha brainwave pattern, various authors have speculated that this aspect of the Earth's electromagnetic field may act as a kind of “global mind,” a “silent pulse,” or “a tuning fork for life” with the capacity to organize and influence human consciousness. A leading authority on light, Jacob Liberman, refers to “the frequency of wellness in the universe.” In a remarkable book, George Leonard describes the Schumann Resonance as, “The Silent Pulse: A search for the perfect rhythm that exists in each of us.”



Jacob Israel Liberman, O.D, PhD.
“The frequency of wellness in the universe”

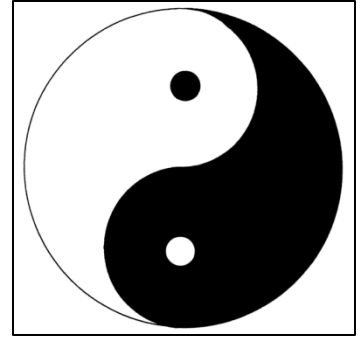




Dr. Wolfgang Ludwig
1927-2004

Dr. Wolfgang Ludwig carried out measurements while writing a thesis on the Schumann Resonance. He wanted to know what kind of natural signals exist in a healthy environment. He became aware that manmade electromagnetic signals in the atmosphere prevented accurate measurements of Schumann waves in the city. He decided to take measurements out at sea where, due to good electrical conductivity of sea water, the Schumann waves are stronger. He also decided to go underground to make measurements in mines. He accurately measured two signals, one coming from above, the Schumann resonance, and one from below, the geoelectrical field.

Dr. Ludwig was considered the “Father” of energy medicine in Germany. During his research he came across the ancient Chinese teachings which state that Man needs two environmental signals: the YANG (masculine) signal from above and the YIN (feminine) signal from below.



The earliest Chinese characters for yin and yang are found in inscriptions made on “oracle bones” used in ancient Chinese divination practices at least as early as the 14th century B.C.E. In these inscriptions, yin and yang are descriptions of natural phenomena such as weather conditions, especially the movement of the sun.

This description fits the relatively strong signal of the Schumann wave surrounding our planet corresponding to YANG and the weaker geoelectrical waves coming from below, from within the planet, being the YIN signal. The Chinese teachings state that to achieve perfect health, the energies must be in balance. Dr Ludwig found that this is indeed the case. He writes in his book 'Informative Medizin' that research carried out by E. Jacobi at the University of Dusseldorf showed that the one sided use of Schumann (YANG) wave simulation without the geoelectric (YIN) signal caused serious health problems. On the other hand, the absence of Schumann waves creates a similar situation.

Professor Rütger Wever from the Max Planck Institute in Erling-Andechs built an underground bunker in Andechs, Germany, for use as a laboratory in which human subjects could be shielded from any external time cues, including variations in light, temperature, and electromagnetic fields. Between 1964 and 1989, this bunker was used to conduct 418 studies on 447 student volunteers. Professor Wever observed that the students’ circadian rhythms drifted away from a 24 hour day. The length of their sleep/wake cycle varied from 12 hours in some subjects to 68 hours in others. The subjects were typically unaware of the change in their sleep/wake cycle. The subjects suffered emotional distress and migraine headaches. After only a brief exposure to 7.8 Hz (the frequency which had been screened out), the volunteers physical and emotional health stabilized again.



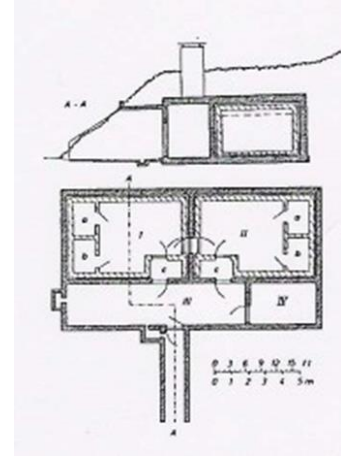
Professor Rütger Wever

Similar health complaints were reported by the first astronauts and cosmonauts, who, out in space, also were no longer exposed to the



Schumann frequencies. NASA mobilized its resources to develop methods that can enhance bone retention, prevent or alleviate muscle atrophy, and augment natural healing/regeneration

processes in a space environment with little access to conventional treatments. Modern space crafts contain devices which simulate the Schumann frequencies to prevent bone loss, muscle atrophy, weakness, and fatigue. On Earth, these devices have been found useful in the treatment of various muscle diseases, age- and cancer-related muscle atrophy, osteoporosis, and other bone diseases. The use of pulsing electromagnetic fields for stimulating healing in fracture non-unions had become an established orthopedic practice and was approved by the FDA in 1979. Research by NASA identified which PEMF frequencies are most effective in producing biological responses in bone and muscle cells. The long-term goal was to produce garments incorporating PEMF devices that could be worn by astronauts. Eventually NASA contractors patented systems for this purpose.²⁴



Underground bunker in Andechs, Germany used by Wever to study the health effects of shielding people from the Schumann Resonance.

What has emerged is a detailed and intimate answer to T.H. Huxley's question about our place in nature and our relation to the cosmos. Our bodies detect the electric and magnetic variations caused by distant solar and celestial events and use the information to adjust our biological clocks.²⁵

A number of scholars have suggested that human health and behavior are influenced by geoelectric fields. One of the most prominent was one of the world's foremost chemists, Svante August Arrhenius, who developed the theory of how salts dissolve in water. He also discovered the Greenhouse Effect.

Just before 1900, Arrhenius suggested that biological rhythms might be synchronized with tides in the cosmic forces that surround the earth. Later he suggested that tidal magnetism is one of the timekeepers that regulate our biorhythms. He suggested that our hormonal rhythms are linked to the lunar cycle. These hormones regulate the rate at which our cells divide and our brain operates. Arrhenius studied the cosmic influences on the behavior of plants, animals, and humans. He found data on the periodic occurrence of bronchitis, epilepsy, birth and death rates, and the human ovulation cycle.



Svante August Arrhenius (1859 – 1927) Swedish scientist who was one of the founders of the science of physical chemistry and recipient of the Nobel Prize in Chemistry in 1903.

After publishing these concepts in 1898, Arrhenius went on to other problems. He left it to other scientists to fill in the details of the biological effects of geophysical fields. According to Ward (1971), there was little interest in the subject.²⁶ However, it appears that Ward was unfamiliar with the extensive studies on biological clocks done in Europe following on the work of Arrhenius. These studies were carefully documented in a book by William F. Petersen (1947) entitled *Man, Weather, Sun*. Other details were presented at a conference on Biological Clocks held in 1960 at Cold Spring Harbor, New York, and published in Volume XXV of their proceedings.²⁷

It took half a century for an American scientist to take interest in biological clocks. That man was Frank A. Brown, Jr., Morrison Professor of Biology at Northwestern University. Brown's theories about the biological influence



Frank A. Brown, Jr., at the 1960 Cold Spring Harbor Symposium on Biological Clocks.

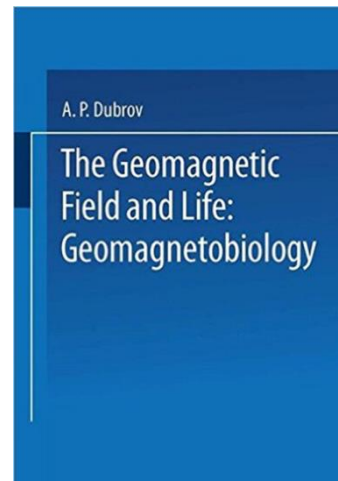
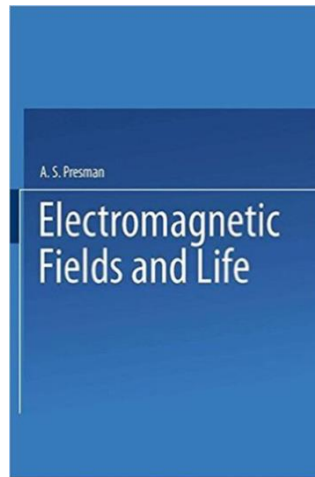
of the subtle and mysterious geophysical forces that surround the earth began one of the sharpest controversies in modern biology. One of the authors of this article (JLO) was a close friend of Frank Brown while they were together on the faculty at Northwestern University and later at the Marine Biological Laboratory in Woods Hole, Massachusetts. Brown retired to Woods Hole to finish his writings about biological clocks. He wrote several papers that were never published. From some of his unpublished papers:

Through a "common electromagnetic sense" the living system should possess, theoretically, almost endless potential for viewing indirectly virtually every aspect of its planetary environment, and even well beyond.

And:

The organism can only arbitrarily be defined as separate. The organism and the physical environment are mutually invasive.

In addition to his experimental research on biological clocks, Frank A. Brown Jr. was responsible for the translations into English of two valuable books originally published in Russian.



*A broad region of the electromagnetic spectrum long assumed to have no influence on living systems under natural conditions has been critically re-examined. This spectral region extends from the super-high radio frequencies, through decreasing frequencies, to and including essentially static electric and magnetic fields. Many of the effects are produced by field strengths very close to those within the natural environment. **The author has suggested that such fields normally serve as conveyors of information from the environment to the organism, within the organism, and among organisms. He postulates that in the course of evolution organisms have employed these fields in conjunction with the well-known sensory, nervous, and endocrine systems in effecting coordination and integration.***

~A.S. Presman

My book on the geomagnetic field was written to provide a better picture and understanding of the world around us, its main driving forces, and factors, to help us to know ourselves, and to proceed further.

~A.P. Dubrov

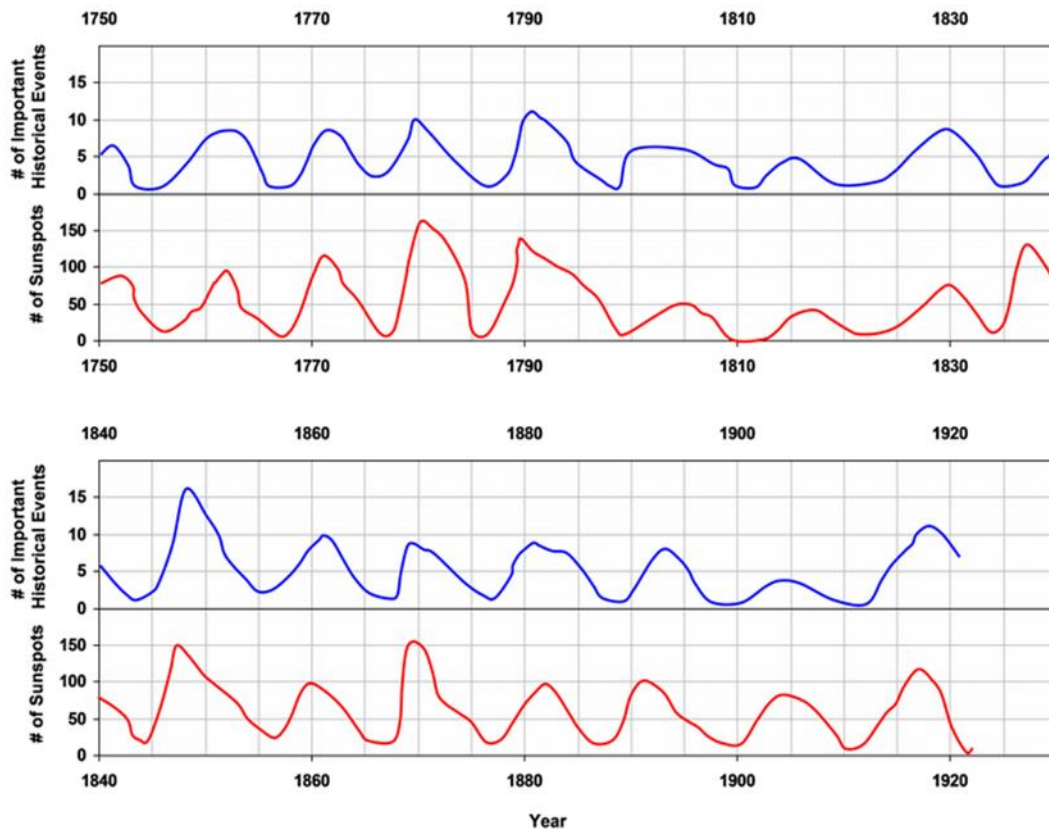
For many it is obvious that life is part of a larger fabric, and that rhythms of the sun, moon, planets and other celestial bodies must affect us. And our evidence on Earthing or grounding supports this. However, for some scientists, there is strong bias against any concept that might be taken as support for astrology, a subject that is regarded with great skepticism. Two personality issues are in competition. One is the more feminine poetic perspective that “no man is an island” and the other is the more masculine individualized pioneer attitude of self-reliance depicted in stories and films of “How the West was Won” and other such ventures requiring strong individuals who could “conquer the wilderness” by being impervious to the forces of nature.



Alexander Chizhevsky

Historically, many cultures and religions believed collective behavior could be affected by the sun and other external cycles and influences. While there is much skepticism about this, there is also scientific evidence supporting it. On a societal scale, increased

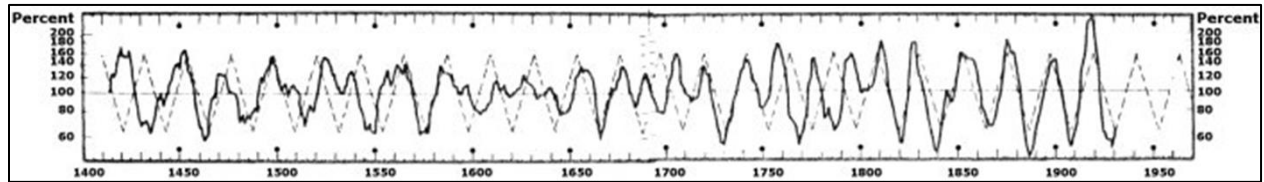
violence, crime rates, social unrest, revolutions and frequency of terrorist attacks have been linked to the solar cycle and the resulting disturbances in the geophysical fields. The first scientific evidence of this was provided by Alexander Tchijevsky, a Russian scientist who noticed that the more severe battles in World War I occurred during peak sunspot periods. Tchijevsky then conducted a thorough study of global human history dating back to 1749 and compared the occurrence of key human events with the occurrence of solar cycles over the same time period until 1926. Tchijevsky's original data is shown below. The correlations are obvious.



Tchijevsky's extraordinary claims, contained in his first book, *Physical Factors of the Historical Process*²⁸, were greeted with near universal derision. In the end, though, his theory checked out: more than three-quarters of all instances of human unrest, including the Russian Revolution of 1917, occurred during solar maxima, the periods of the maximum number of sunspots in any solar cycle. The only area that remained questionable was the mechanism of this cosmic connection, but Tchijevsky had a theory: our dependence upon the cosmic pulse of the sun might be mediated by ions, or excess charge, in the air. Arrhenius and others had reached a similar conclusion.

Tchijevsky was not the only person who studied these concepts. Research by Professor Raymond Wheeler (1892-1961) at the University of Kansas uncovered the fact that international battles wax and wane at nearly regular intervals of about 11 years.²⁹ His research provided numerical rankings for the severity of individual battles correlating to solar cycles. Wheeler's data extended back 2,500

years and was extensively analyzed by Edward Dewey, who founded the Foundation for the Study of Cycles, now located in Palm Springs, California. Dr. Buryl Payne, a physicist/psychologist who directed the Academy for Peace Research, was also able to correlate the onset of international battles and unrest with solar activity for the past 200 years³⁰:



22 year cycles of war, from Wheeler, reference 22.

It has often been speculated that geophysical fields affect physiological mechanisms via altered brain rhythms and abnormal hormonal levels. In other words, wars are a kind of mass psychosis. ‘War Fever’ may be a real phenomenon. A possible explanation emerges from a comparison of the alpha brain waves and the Schumann resonance, mentioned above.



Geoelectricity and Life

Arrhenius suggested that the electrical tension in the air influences biochemical reactions and thereby affects all living things.

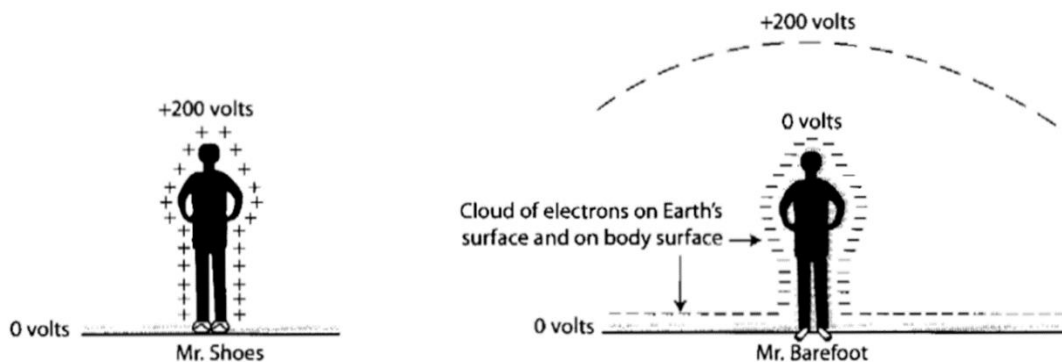
The physiological influence of atmospheric electricity which has been known for a long time in plants may have a broad influence of the whole of living nature. A high electrical tension in the air may cause chemical reactions which have an effect on the organisms. This would affect the reproductive cycle of palolo worms and of other animals of different characteristics. And it is clear that atmospheric electricity has a marked influence on nervous disorders.

~Svante Arrhenius³¹



The palolo worm mentioned by Arrhenius exhibits unique breeding behavior: during the breeding season, always at the same time of year and at a particular phase of the Moon, the worms break in half; the tail section (the “epitoke”), bearing reproductive cells, swims to the surface, where it releases eggs and sperm. Tens of thousands of epitokes swarm and release gametes simultaneously, attracting predatory fish and humans. The front section of the worm (the “atoke”) remains below in the substrate.

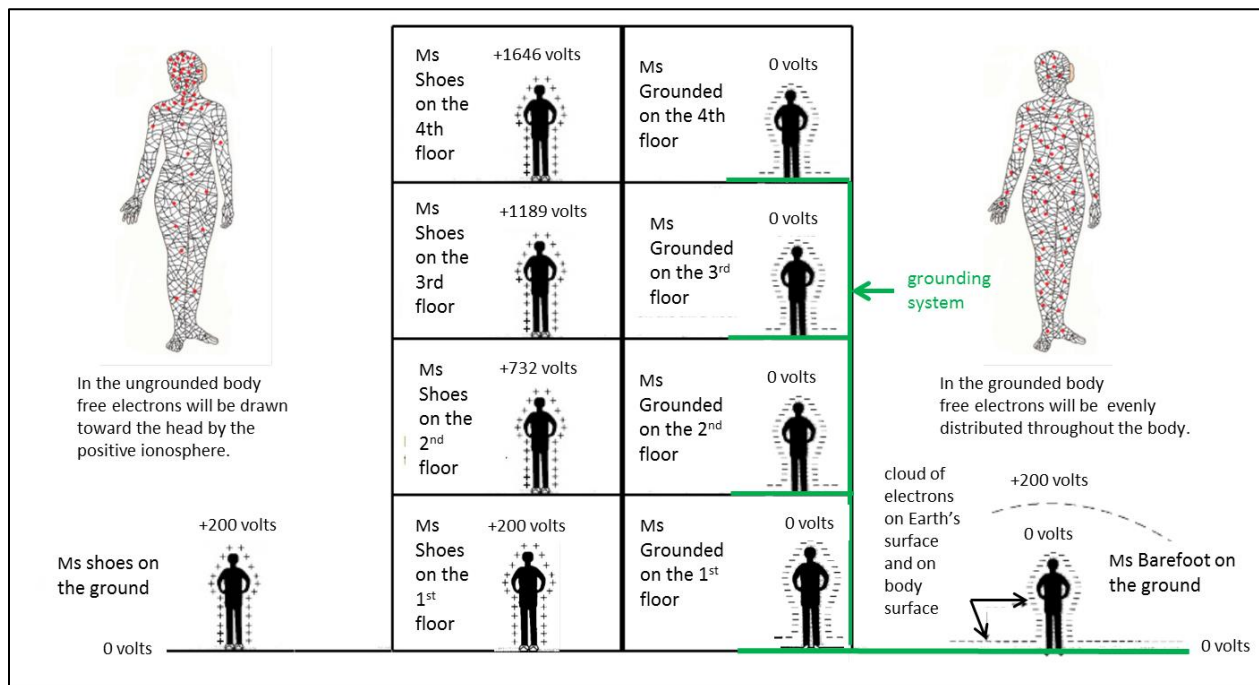
We now know exactly what Svante August Arrhenius meant by “the electrical tension in the air.” The surface of the earth has an abundance of electrons that give it a negative electrical charge. In the diagram to the left below, from Nobel Laureate Richard Feynman, if you are standing outside on a clear day, wearing shoes or standing on an insulating surface like a wood or vinyl floor or asphalt, there is a static electrical tension or charge of some 200 volts between the Earth and the top of your head. Right, if you are standing outside in your bare feet, your whole body, both inside and outside, is in electrical contact with the Earth's surface. Your body is a relatively good conductor. Your skin and the Earth's surface make a continuous charged surface with the same electrical potential. There will be no static charge on or in your body.³²



The difference between standing on the surface of the Earth wearing shoes (left) and barefoot (right). Adapted from reference 27.

Because of the enormous electrical field between the ionosphere and the surface of the Earth, wearing shoes with insulating soles leads to a large potential between the feet and the head (left).

This situation gets worse the higher one lives in an apartment building.³³ Health data indicate that a significant stroke risk is associated with living in multi-story buildings compared with single-story residences.³⁴ If each floor is 10 feet higher than the one below, the potential increases by about 457 volts for every floor.¹⁸ Earthing/grounding prevents this build-up of charge, or “electrical tension” as Arrhenius called it.



World-famous scientists Svante Arrhenius, A.S. Presman, Frank A. Brown Jr., and others have all suggested that the electric field of the Earth serves to convey information from the environment to the organism, within the organism, and among organisms. Arrhenius that hormonal rhythms are linked to the lunar cycle. Pressman postulated that in the course of evolution organisms have employed geophysical fields in conjunction with the well-known sensory, nervous, and endocrine systems to achieve physiological coordination and integration. Frank A. Brown, Jr. suggested that an electromagnetic sense enables organisms to have an almost endless potential for sensing every aspects of its planetary environment and beyond. We now understand precisely how local and distant phenomena affect the Earth’s electric field, which, in turn, affect our biological clocks. A key discovery is the Schumann Resonance, named after the German scientist who discovered it.

Stated simply, one of the best things a person can do to lessen the likelihood of developing a chronic disease is to spend at least part of their day connected to the earth. Going outside barefoot is one way to do this. Another is to place a grounding sheet on one's bed and a third way is to have a grounding mat under one's feet while they are sitting. These are exceedingly simple, virtually trivial alterations in one's lifestyle that can have profound health implications.

Conclusions

Physiological rhythms are central to life. We are all familiar with the beating of our hearts, the rhythmic motions of our limbs as we walk, our daily cycle of waking and sleeping, and the monthly menstrual cycle. More than a hundred other rhythms, equally important but not as obvious, underlie the release of hormones regulating growth and metabolism, the digestion of food, and countless other bodily processes. The rhythms interact with each other as well as the outside fluctuating, environment. Innumerable feedback systems coordinate the orderly functioning that enables life. Disruption of the rhythmic processes beyond normal bounds or emergence of abnormal rhythms is associated with discomfort, disorder or disease. To see how quickly normalization of physiology takes place after Earthing, look at *Rapid Benefits: An Earthing 1-Hour “Time Trial”*³⁵ and *One-Hour Contact with the Earth’s Surface (Grounding) Improves Inflammation and Blood Flow—A Randomized, Double-Blind, Pilot Study*.³⁶

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³ Harvey, P.W., 1996. *The adrenal in toxicology: target organ and modulator of toxicity*. Bristol, PA: Taylor & Francis, p. 7.

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⁵ Huxley TH. *Evidence as to Man's Place in Nature*. New York: D. Appleton, 1863.

⁶ <https://www.thebarefootrunners.org/>

⁷ Chief Luther Standing Bear. Quoted from McLuhan TC. *Touch the Earth*. New York: Outerbridge & Dienstfrey; 1971.

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- ³⁵ Rapid Benefits: An Earthing 1-Hour "Time Trial" at <http://www.earthinginstitute.net/?p=168>
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