

# Elec-Treecity -- The Next Bigly Thing !

*"Better to light an LED than to curse the darkness"*

by **Robert A. Nelson**

**Every** tree within reach of human greed and ingenuity now can be exploited for free electricity -- "Elec-Treecity", if you will -- or "Tree-Lectricity", if you prefer.

Inquiring minds might text/tweet, "WTF ru babbling about?", to which crass social intercourse a studied mind can respond, "FYI, read/share the attached file", viz :

## **Voltree**

In 2010, Gordon Wadle and Kris Lagadinis received US Patent US7667340 for their novel method to produce "Power from a Non-Animal Organism". The invention exploits the difference in pH between the soil and tree roots to generate micro-currents.

Wadle was inspired by lightning, over half of which erupts from the ground. The resulting system comprises a metal rod owwied into the tree (yes, it hurts, dammit!), a grounding rod, and circuitry that produces 2.1 volts, sufficient to maintain a full charged Ni-Cd battery and LED light load. His partner Chris Lagadinis designed the circuitry to filter and amplify the collected energy to charge a battery. It could be designed to generate 12 volts and one amp of power, which is useful power level that can power many small tools and appliances.

The inventors designed the Voltree bioenergy harvester to recharge or replace batteries for micro-power remote sensors such as radiation detectors, climate monitors, and wildfire alert networks (RIP Smokey). Voltree Power describes it thus on their [website](http://voltreepower.com) (voltreepower.com):

"When coupled with our software and low-power transceiver hardware, this technology makes practical the deployment of large-scale, long-term sensor networks in a variety of previously inaccessible environments, such as under triple-canopy or in hostile terrain. Voltree Power's bioenergy harvester can be used with temperature and humidity sensors as shown below, or with a wide variety of other sensors... [ It is ] independent of wind, light, heat gradients, or mechanical movement... Weather-resistant and completely quiet... Environmentally benign to produce and operate... Parasitically harvests metabolic energy from any large plant without harming it... Useful lifetime of the device is only limited by the lifetime of the host."

This simple (if you ignore the computer) technology ultimately may prove itself to be more practical and more affordable than solar or wind power. Wadle said:

"While the development is in its infancy, it has the potential to provide an unlimited supply of constant, clean energy without relying on fossil fuels, a power generating plant complex or an elaborate transmission network... Now we've learned that there is an immense, inexhaustible

source of energy literally all around us that can be harnessed and converted into usable electric power."

Their patent offers some examples with enormous potential for electricity and profit, despite being micro-power. The inventors tested many parameters, e.g.:

"...[V]oltage yield from different trees using different tap configurations, different ground rod quantities, and different numbers of taps... different geographic locations of the trees, different types of trees, different tap materials, different tap depths, different tap diameters, different tap heights (i.e., height from ground level), different tree altitudes, varying numbers of taps, and varying soil conditions...

"[F]actors such as the species and/or the variety of a particular plant, e.g., tree, affects the available voltage and/or current. For example, an oak tree located 40 feet above sea level and a maple tree located 200 feet above sea level provided differing amounts of voltage and/or current. Trees produced a substantially constant DC voltage (and some AC voltage), while other plants produced a less-constant DC voltage than trees... The load can draw more current from the tree using multiple ground rods...

"The apparatus was used to collect weather related information. Voltage readings were collected as a lightning storm approached from the West of a test site including a tree. As the storm approached the test site, a voltage provided by the tree decreased... The closer the storm was relative to the test site, the larger the voltage drop... Thus, by measuring the voltage provided by the tree 25, it was possible to gather information regarding the severity of an approaching storm. After a storm had passed over the test site, the voltage provided by the tree would return to normal levels within about thirty-five to forty minutes."

Besides providing power for gadgets, elec-treecity can be used to stimulate the growth of other plants to new heights! This new form of electroculture should revolutionize horticulture some century. The Voltree patent describes the experimental cultivation broccoli and tomatoes cultivated while coupled to a group of plants roots, resulting in the benefits of increased growth and resistance to pests and frost:

"The energized broccoli plant grew taller than the other neighboring broccoli plants, and produced a larger center head and more side heads than the other neighboring broccoli plants. An additional experiment was performed by energizing the smallest and weakest broccoli plant of the group of broccoli plants. Within about two to three days of being energized, the newly-energized broccoli plant was about the same size and height as the neighboring non-energized broccoli plants.

"The energized broccoli plant was not bothered by pests, whereas the non-energized broccoli plants were attacked by pests. As determined by several visual inspections during the growing season, the energized broccoli plant was substantially untouched by pests, whereas the non-energized broccoli plants' leaves were eaten by pests. As a further experiment, a worm was placed on the energized broccoli plant and then onto one of the other broccoli plants. After

being placed on the "energized" broccoli plant, the worm did not eat the broccoli plant and fell off. When the same worm was placed on the non-energized broccoli plant, the worm began eating the broccoli plant soon thereafter. An additional experiment was performed by energizing a pest-inhabited broccoli plant. Within about one hour of being energized, the pests inhabiting the broccoli plant vacated the plant...

"The energized tomato plant grew approximately thirty-three percent higher than the non-energized plants. The energized tomato plant also produced more tomatoes than the non-energized tomato plants. Furthermore, the energized tomato plant survived the first two frosts of the winter season, whereas the non-energized tomato plants died after the first frost."

The "dirty" electricity collected by the Voltree harvester can be cleaned sufficiently to charge batteries without need for computer controls. The Ambient Power Module (APM), invented by Joe Tate, is a very simple array of capacitors and diodes that functions as a voltage multiplier to convert radio frequencies into electrical power sufficient to operate clocks, smoke alarms, and battery chargers.

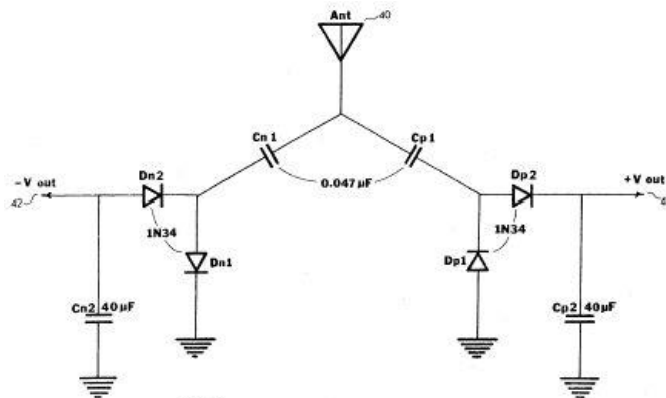


FIG 3

Tate received US Patent US4628299 (Seismic Warning System Using RF Energy Monitor) for the APM. As the title indicates, it also can provide early warning because fault lines generate radio frequencies that increase in amplitude before an earthquake. Furthermore, it acts as a passive proximity detector for ships & structures. The APM should integrate neatly with the Voltree system, or with General Squier's Floraphone:

### Tree-tennas and Floraphones

Major-General George O. Squier, who was the US Army's Chief Signal Officer during World War One, developed a method to enlist trees as antennas. In July 1919, he published a detailed article explaining the technology of "Talking Through The Trees" in *The Electrical Experimenter*:

"My attention was first called to this phenomenon during the course of summer maneuvers of the Army at Camp Atascadero, CA, where, due to the prevalence of the dry season of the soil, it was found that the regular Army buzzer telephone and telegraph sets were inoperative with any ordinary ground or earth but became operative when connected to a metallic nail driven in the

trunk or roots of a live tree. This incident led the author to pursue the subject experimentally in the autumn of 1904 continuing the experiments to the range of frequencies than employed in radio-telegraphy..."

Eventually he determined that trees are "as good as any man-made aerial, regardless of the size or extent of the latter, and better in the respect that it brings to the operator's ears far less static interference."

The eminent journal *Scientific American* also introduced the public to the technology in July 1919. The article "With Trees For Ears" promised "A Wireless Station Within the Reach of Everybody". Apparently they hadn't yet heard of cellphones:

"It will puzzle the amateur as it has puzzled the experts, how a tree, which is certainly well grounded, can also be an insulated aerial. The method of getting the disturbances in potential from treetop to instrument is so simple as to be almost laughable. One climbs a tree to two-thirds of its height, drives a nail a couple of inches into the tree, hangs a wire therefrom, and attaches the wire to the receiving apparatus as if it were a regular lead-in from a lofty copper or aluminum aerial. Apparently some of the etheric disturbances passing from treetop to ground through the tree are diverted through the wire --- and the thermionic tube most efficiently does the rest.

"It is interesting to learn that the tree behaves very much like any other aerial; it receives better in dry clear weather than in muggy, damp weather. It plucks messages from the ether more clearly at night than in the day. It is affected very little by rain. It is affected not at all by the presence of other trees; so far as has yet been ascertained it makes little difference whether one drives his nail in a tree in the forest or a lone tree on the plain. Certainly it makes no difference that amounts to anything whether the tree be just an ordinary tree or a giant...

"A dead tree will not do, and a tree not in leaf is not so sensitive as one in full foliage. It makes much difference where the nail is driven. General Squier calls the proper place the optimum point, and experimentally it has been determined that two-thirds of the distance from ground to top is the best place -- in a 60-foot tree, 40 feet from the ground.

"One nail is sufficient, and it may be any kind of nail; but copper is preferred as not rusting. In practice, if a tree station is to be at all permanent, several nails would be driven and connected to the same wire, each additional nail up to 6 or 8 making the diverted current a little stronger. But 40 nails apparently produce no clearer signals than half a dozen.

"The tree may serve as a receiving station for several sets, either connected in series with the same material or from separate terminals.

"[F]or short distances it has been shown that two-way telephonic communications is easily established through trees with remarkably low values of transmitting antenna current."

The *Scientific American* article also anticipates the Treevolt device by almost a century:

"Since a transmitting station is a central point for electromagnetic waves sent out in all directions over the surface of the earth, a large class of information, such as meteorological reports, crop reports, and general news items of interest to all, may in time be sent from central points, to be received in many places within the radius of influence of the signal station, and this, too, by the simplest form of apparatus."

General Squier almost waxed florid about his invention:

"The messages carried over this tree telephone and telegram system have been named by the writer. They are to be 'floragrams'. The tree telephone is to be a 'floraphone'; the tree telegraph a 'floragraph'.

"The discovery is now announced after experiments covering 15 years, beginning in California and continuing intermittently until the outbreak of the war, when they went forward with vigor as an emergency means of communication. The system was utilized during the war in listening-in on the German radio communication..."

"Without entering into the details of these preliminary experiments here it may be said that one of the best receiving arrangements is found to be an elevated tree earth-terminal in the upper part of the tree top, and an earth consisting practically of several short pieces of insulated wire, sealed at the outer end, radiating out from a common center, and buried a few inches beneath the surface of the ground in the neighborhood of the tree. It was soon found that a tree-antenna could be used efficiently as a multiple radio receiving set over widely different wavelengths, receiving either from separate terminals at the same or different heights of the tree, or in series from the same terminal.

"This same type of circuit was employed in an inverse manner for radio-telephonic transmitting purposes, although the experiments thus far have been limited to short distances. It was found that 2-way radio-telephonic communication was easily established with remarkably low values of transmitting antenna current. A number of trees can be connected up to give the effect of one large antenna."



## The Spray-On Antenna

Although it defies conventional antenna technology, the "Spray-On Antenna" invented by Anthony Sutera and Rhett Spencer is a new paradigm that has been adopted by some military and emergency services.

The spray is formulated with proprietary nano-capacitors that minimize the magnetic field in Near Field Magnetic Induction (NFMI). That allows the radiation of an amplified signal with no additional power input, besides increasing range, improving efficiency and saving energy.

When sprayed, the particles chemically weld together in a solid form that greatly improves antenna performance. In an exemplary test, an RFID chip with 5-foot range transmitted to 700 feet when connected to the spray-on antenna.

In Sutera's [video](#) presentation of the product, he says:

"We have come up with a material that when you spray it on, it lays out just in the right pattern and all of these little capacitors charge and discharge extremely quickly in real time and they don't create any heat."

Spencer, *et al.* received US Patent US9088071 (Techniques for Conductive Particle Based Material). In abstract, it is described thus:

"An antenna system and method for fabricating an antenna are provided. The antenna system includes a substrate and an antenna. The antenna includes a conductive particle based material applied onto the substrate. The conductive particle based material includes conductive particles and a binder. When the conductive particle based material is applied to the substrate, the conductive particles are dispersed in the binder so that at least a majority of the conductive particles are adjacent to, but do not touch, one another."

The nano-particles probably including copper, which is mentioned in their patent. If you're curious, the thrilling manufacture of nano-capacitors also is described in patents US9802050 and US7428137.

## W-Waves

Trees have plenty to say about all this and more (via W-Waves), if you are to believe Ed Wagner ([Wagner Research Laboratory](#), Rogue River, OR):

"In 1988 I discovered waves in plants. I called them W-waves because they were first observed in live wood. These waves travel throughout plants. I also found these waves were present in other materials such as salt solution filled porous materials and likely all matter everywhere since I have detected them everywhere I have searched. I found that W-waves also travel between plants and facilitate plant communication<sup>2</sup>. If I wounded one plant I found an almost immediate response in nearby plants... [T]he oscillations of W-waves in plant material seems to organize charge so that we see periodicity in the organization of charge in plants. Charge is the

only thing other than dark matter that is relatively free to move through ordinary matter... These waves seem to interact with ordinary matter to control charge location, matter displacement, life organization, and provide communication.

"The variable velocities found for these waves may provide better and more versatile means of communication throughout the universe. These waves may travel many times faster than light under the proper conditions since they appear to be non- electromagnetic. They may provide communication with the most remote locations within reasonable times.

"These versatile waves may explain many of the controversial anomalous phenomena found on earth such as dowsing, mental telepathy, acupuncture, person to person healing, communication between plants and between plants and humans, and other related phenomena."

### **I Promise You A 10 Kilowatt Rose Garden**

Several other paths to plant-based electrical power are being explored by researchers, though they seem to be a long way to go for an electron. For example, scientists at UC Berkeley have devised up a technique to generate energy from genetically modified tobacco. The extract of cultured tobacco plant cells is applied to a substrate to produce solar power. Others have prototyped a method to exploit the dielectric liquid-gas interface during evaporation. The moving interface changes the liquid's electrical properties. When a capacitor is placed on the surface during evaporation a potential of 2-5  $\mu$ volts is generated. The Bio Volt team from MIT created a prototype device to transmute cellulose biomass to electricity. It requires 6 months to recharge a cellphone battery, but it costs only a few dollars to construct, and waste biomass is widely available and abundant. The power can be increased by connecting several units.

Meanwhile, now you know how to light an LED with a tree. It isn't much, but "Better to light an LED than to curse the darkness", according to a seance channeling of Nikola Tesla by this writer.

**About the Author: Robert A. Nelson** is a 10th grade dropout with no credentials. He established [Rex Research](http://www.rexresearch.com) [ <http://www.rexresearch.com> ] in 1982 to archive information about suppressed, dormant, and emerging sciences, technologies, theories, therapies, and stuff. He persists...