



Searchers for a New Energy Source

Tesla, Moray, and Bearden

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Tesla, Moray, Bearden, and others have claimed the existence of another source of energy besides those presently in use. Like sun and wind, this source is available without regard to political boundaries. If true, the development of this energy source would be one of the most important events of the century.

It seems that every time mankind reaches a limit of growth due to exhaustion of inexpensive energy supplies, another energy source is discovered and developed. England had essentially depleted its resource of timber when the technology to mine and burn coal was developed, for example. After coal, technologies for oil, gas, hydro, nuclear fission, wind, photovoltaic, etc. were developed. With each new development, the world was able to support a greater population at a higher standard of living than before.

Today, however, many developing countries have reached a limit in improving the quality of life, due in part to the lack of an adequate and economical energy supply. The developed nations are worried about global warming, acid rain, and nuclear waste. The recent excitement about cold fusion illustrated the keen desire for a new energy source, one operating on scientific principles that perhaps are unknown or poorly developed at the present time.

A number of researchers have claimed that such a new energy source exists. This source would be in addition to cold fusion if cold fusion is shown to be valid. Three of the most famous researchers with this belief have been Tesla, Moray, and Bearden. This article discusses each of their concepts.

The exact words used to describe the energy source differ among the three men, partly due to the different time periods involved. However, the basic outline seems to be as follows. Consider a small, apparently empty volume in front of your face. Ask a child what is in the volume, and you will get a puzzled look and a reply that *nothing* is in the volume. Based on the senses of touch, smell, sight, hearing, and tasting, it would certainly appear that the small volume is indeed empty. Ask the same question of a sophomore engineering student and the answer may include oxygen, nitrogen, argon, water vapor, photons, radio waves, a few ions, and perhaps a neutrino. Empty appearing space is really not so empty. We just had to build detectors or receivers to determine what is already there.

These three researchers would claim that our small volume also contains energy, which can be extracted with the proper receiver. Philosophically, this receiver would be no different from a photovoltaic cell, which merely converts nonelectrical energy into electrical energy, or perhaps a heat pump, which uses a small amount of electrical energy to

pump a larger amount of ambient thermal energy from one place to another. We just need to discover how to build such a receiver or energy pump.

Tesla

Nikola Tesla was born July 9, 1856, in Smiljan, Lika, Serbia (now Yugoslavia). His father was a Serbian Orthodox priest. Tesla became an electrical engineer and went on to invent (or discover) more important devices or concepts than perhaps any other man in history. The idea of the polyphase induction motor came to him while in Budapest, and he built the first model in 1883. He came to the United States soon after and tried to sell his idea to Thomas Edison. Edison was doing well with his dc system, so he was not interested in an ac machine. Tesla soon sold his idea to George Westinghouse. An entire polyphase ac system of generators, transformers, and protective devices was developed and has changed life throughout the world.

In addition to inventing the ac power system, Tesla did pioneering work in radio, robotics, amplifiers, and refrigeration. He had 112 U.S. patents and a total of about 700 patents worldwide. He was selected for the Nobel prize in 1912, but refused the honor because it was to be shared with Thomas Edison, for whom he had little professional respect [1, page 20]. Without question, he was a good engineer.

However, about 1900, Tesla started investigating a number of advanced concepts that were not accepted by the scientific community at the time, and, in most cases, are still not accepted. This effort caused the loss of his funding from John P. Morgan. He then spent the last years of his life in near poverty before dying in 1943. His personal papers disappeared at that time, with a fraction of them appearing later in his native Yugoslavia. Specifics of his work on these advanced concepts are, therefore, not available to us, but perhaps are known to some Eastern European countries.

Regarding the idea that space itself contains energy, the following statement by Tesla to the Institute of Electrical Engineers in London is instructive [2, page 58]. "Ere many generations pass, our machinery will be driven by a power obtainable at any point of the universe. This idea is not novel. Men have been led to it long ago by instinct or reason. It has been expressed in many ways, and in many places, in the history of old and new. We find it in the delightful myth of Antheus, who derives power from the earth, we find it among the subtle speculations of one of your splendid mathematicians, and in many hints and statements of thinkers of the present time. Throughout space there is energy. Is this



Nikola Tesla (photo courtesy of the Smithsonian Institution)

energy static or kinetic? If static our hopes are in vain, if kinetic (and this we know it is, for certain), then it is a mere question of time when men will succeed in attaching their machinery to the very wheelwork of nature. Of all, living or dead, Crookes came nearest to doing it. His radiometer will turn in the light of day and in the darkness of the night, it will turn everywhere where there is heat, and heat is everywhere. But, unfortunately, this beautiful little machine, while it goes down to posterity as the most interesting, must likewise be put on record as the most inefficient machine ever invented!"

Like many other of his ideas, Tesla was not as specific about this kinetic energy in space as we would like. He had two related patents, No. 685,957, *Apparatus for the Utilization of Radiant Energy*, and No. 685,958, *Method of Utilizing Radiant Energy*, both issued November 5, 1901. The basic concept seems to be that this radiant energy would strike one plate of a large capacitor, perhaps causing electrons to be ejected to the surroundings so that the plate would have a net positive charge. This positive charge would then be used to supply a current through various electrical loads.

He shows a Roentgen Tube as a possible source for the radiant energy in the patent drawings. We know that xrays can have adequate energy to eject electrons from metals, so that it is theoretically possible to convert xrays into electrical power by this method. The efficiency would be low, however. It appears from his later statement that was quoted above that Tesla did not believe he had invented a machine of the necessary efficiency. But, as he said, "it is a mere question of time when men will succeed in attaching their machinery to the very wheelwork of nature."

Moray

T. Henry Moray was born August 28, 1892, about the time Tesla was developing the ac power system. His parents were emigrants, a Swedish mother and an Irish father. His interests were in electricity and electrical engineering, but his formal education was limited to correspondence courses and brief attendance at the University of Upsalla, Sweden, while

on a mission for the Church of Jesus Christ of Latter-Day Saints in that country.

Moray started his work on a new energy system in 1909. Soon he was able to report [3, page 20] the following. "During the Christmas Holidays of 1911, I began to fully realize that the energy I was working with was not of a static nature, but of an oscillating nature. Further I realized that the energy was not coming out of the earth, but instead it was coming to the earth from some outside source. These electrical oscillations in the form of waves were not simple oscillations, but were surgings, like the waves of the sea, coming to the earth continually, more in the daytime than at night, but always coming in vibrations from the reservoir of colossal energy out there in space."

Finally in 1925, Moray developed a working model. It was of the size and shape of a AM radio receiver of the day. It required an antenna and ground for operation. One installation used a ground pipe of 0.5-inch water pipe driven about 7 feet into the ground and a wire antenna about 87 feet long [3, page 40]. A rather lengthy tuning process was used, wherein a hand-held magnet was stroked across what appeared to be another magnet mounted on the radiant energy receiver for a period of up to ten minutes. Once tuned into the energy source, the output was used for standard light bulbs, electric irons, fans, and other electrical loads. The receiver was able to deliver several hundred watts for an indefinite period, up to several days in length. The output appeared to be high frequency, rather than dc or 60 Hz.

Moray demonstrated his receiver to many people, and several of the demonstrations were documented by photographs and affidavits. In fact, nearly half of his book is made up of photocopies of affidavits. It was demonstrated at his home and laboratory as well as in remote locations selected by the observers. Except for certain proprietary components (possibly semiconducting valves), the receiver was available for inspection by the observers. A typical affidavit is the following, sworn to by Mr. A.B. Jensen [3, page 112] on January 31, 1963. "I accompanied a group of people consisting of Mr. J.C. Jensen, Mr. Greely Snyder, Dr. Moray, and myself (I recall one other person also was with us but will not give the name, as I am not sure whether I am correct). We drove out past St. Johns in Tooele County, Utah, and then 25 to 30 miles southwest of Johnson's Pass. At that time there was no installation at Dugway, no telephone or electric wires in the vicinity, merely desert land.

"Dr. Moray had packed his equipment and tools necessary to erect it. We selected a spot 50 to 75 feet from our automobile. We assisted in driving a steel rod about 6 feet into the ground. With a blow torch, wires were soldered to the steel rod. We erected two tent poles and fastened an antenna made of #10 stranded copper wire.

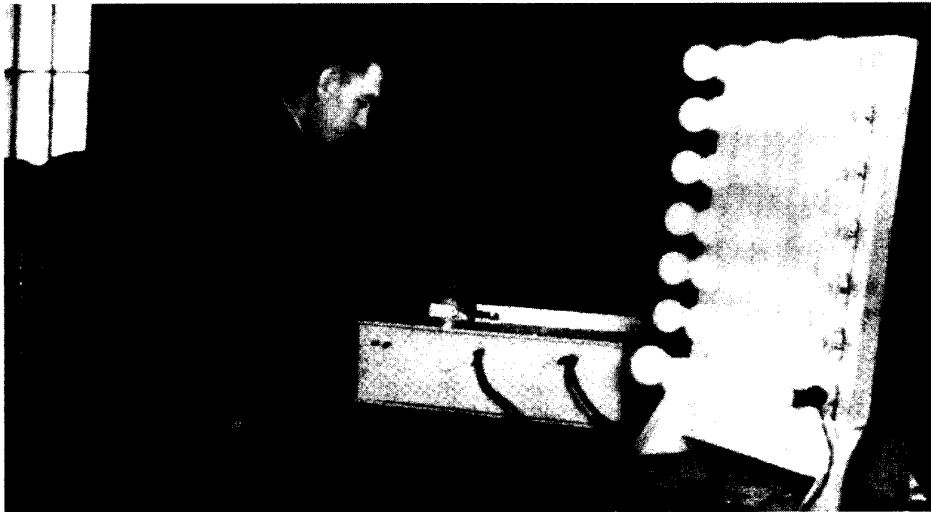
"The wire from the antenna was fastened to the box containing the Moray Radiant Energy Equipment and the ground wire that had been soldered to the steel rod was also fastened.

"Dr. Moray had brought a board with about 35 150-watt lamps mounted thereon, a high frequency motor, a 1,000-watt Taylor's iron, and I believe a heater or fan.

"After he connected the *ground* and *antenna* to the box, Dr. Moray *plugged in* the lamps, iron, motor, etc. The energy from the box lighted the lamps, heated the iron, ran the motor, etc.

We all examined the equipment and determined there were no batteries; there were no hidden connections to electric outlets, as we were miles from any power lines; Mr. J.C. Jensen drove the automobile and selected the location for the demonstration, thus there could have been no prior preparation at the test site by Dr. Moray.

"Although the demonstration took place nearly 25 years ago, I still vividly recall the reaction of all who witnessed it.



Henry Moray in front of his receiver and a load bank of light bulbs

It was our firm conviction that the Radiant Energy Equipment was truly as represented by Dr. Moray."

Moray made a total of seven patent applications regarding his Radiant Energy Device. All were rejected by the Patent and Trademark Office. The reasons given were basically that the device did not fit the physics known at that time. For example, part of the application was for a solid state device like a transistor. In 1931, transistors had not been invented and electron flow required a hot cathode in existing devices, so Moray's device *obviously* could not work. Also, the Patent Examiner stated [3, page 162], "No natural source of electric wave energy is known to the Examiner and proof of the existence of such a source is required." That is, it was not enough to develop a device to tap into an unknown source of energy. The source of energy must also be fully described. Moray was not able to do this, so the patents were denied.

The story involves considerable intrigue, including communist agents and people in black sedans shooting at the Moray automobile. Moray was betrayed by a number of friends who were supposedly helping him with his invention. One working model was destroyed by an employee. He was unable to bring his invention to the market, although two of his sons, John and Richard, now operate a company called Cosray Research Institute, with the hope of yet getting Henry Moray's invention to the world. John Moray recently commented [4, page 5-21] as follows. "The fact remains, Dr. Moray's work is well documented. The motor did run. There was no question. It would even run on the portable antenna my father would rig up in his laboratory. The radio did work. He could bring in Admiral Byrd from Little America, even when normal radio transmission was difficult.

"In the past decade, we spent over one-half million dollars, both our own money and from a feasibility study for the U.S. Air Force. We did a lot of work without giving away all the family jewels. We collected together all the notes that had been distributed throughout the United States and Canada and evaluated them, after which we sent them back to storage. We reproduced a few of the original parts and built a number of our own. We tried to do them first of all the way by father would have done them and then adapted to the so-called state of the art.

"We have identified at least 36 semiconductors in the six tubes used in Dr. Moray's power unit. We believe there may have been at least one superconductor. It is only a matter of time and money until we complete a viable unit."

An invention of a device to extract *free* energy from the surroundings would have huge value and would certainly attract the attention of two groups of people: one group that would benefit financially and would therefore want to steal the invention, and a second group that might lose investment on existing energy devices and would therefore want to stop the invention from being developed. This, plus the tendency of most scientists and engineers to reject the whole concept immediately with phrases like "conservation of energy" and "per-

petuum mobile," could easily result in a scenario such as that described in Moray's book. There seems to be no compelling reason not to believe that the pictures, affidavits, and accounts of witnesses are valid and that T. Henry Moray did indeed stumble upon a device to extract free energy from the surroundings.

Bearden

Thomas E. Bearden, born December 17, 1930, has been perhaps the most important leader in the area of free energy for the last decade or more. He has written several books in the area. He has a good technical background (MS in Nuclear Engineering) and a good military background (Lieutenant Colonel, U.S. Army, Retired). He speaks widely at meetings of free energy enthusiasts. He has developed a theory explaining the source of energy, which we will attempt to summarize.

He calls his theory *scalar electromagnetics*. It is a unified field theory in that gravity is included along with the usual electric and magnetic fields. The starting point for his theory is the nature of the vacuum itself, a concept shared by a number of other physicists. Bearden explains it [5, page 20] as follows. "The modern concept of the vacuum is that it is like a seething plasma or gas. However, it's a very strange gas, for each particle arises spontaneously out of nowhere (according to quantum mechanics), and almost immediately turns into something else and/or disappears. Thus the vacuum plasma or gas is rather peculiar, the particles comprising it appear and disappear so rapidly that they cannot individually be detected. However, while a virtual particle exists, it is in motion, and so a violent flux of these *phantom particles* comprises the vacuum/spacetime.

"Quantum mechanics assumes that the violent flux of vacuum ghost particles is totally randomized. That is, no deterministic pattern exists in the flux. These virtual changes collect or cohere statistically, not deterministically, in the standard assumption. When they happen to collect/cohere sufficiently, the threshold of an observable quantum change is breached, and a quantum change occurs."

That is, Bearden believes that the vacuum is not the quiet, empty space that most of us have assumed it to be. Rather, it consists of *particles* too small to be detected and moving in and out of our four dimensional space too quickly to be detected. By definition, there is no way to directly prove (or disprove) his theory. It would remain just another interesting

concept of modern physics, unless a second concept of his should prove experimentally true, that particles can be cohered into a large enough collection to produce observable results. By analogy with lasers, this could require a *pumping* action wherein energy must be introduced to start the action. Once started, energy could flow from the vacuum through a receiver into a load. The random flux of virtual particles around the receiver would recharge or replace the energy being removed.

But what physical effects would tend to cohere the vacuum? Bearden believes that we should start with two (or more) opposing magnetic fields such that the opposing fields cancel each other. He maintains, however, that the individual fields can interact with the vacuum even though the combined field is zero.

In classical electromagnetic theory, the fields are considered the cause and the potentials are considered the effect. We obtain the potential V by integrating the electric field E over some path. The force on a charged particle is zero when E is zero, regardless of the value of V . Since most of our instruments measure the force on a charged particle rather than some *absolute* value of V , we tend to think of potentials as being a necessary side effect of fields. Quantum mechanics, on the other hand, starts with the potential as the cause and the field as the effect. In most cases, one gets exactly the same answer with either interpretation. The question in those cases is a philosophical one, rather like the question whether light is a wave or a particle. But, what about the case of a nonzero potential and a zero field, with an observable effect that implies some sort of absolute reality to the potential? Such appears to be the situation in the Aharonov-Bohm Effect [6].

One way of getting opposing magnetic fields is to wind two coils on the same cylinder, one on top of the other, one right-handed and the other left-handed, and operate them in parallel across the same voltage source. The magnetic field inside the cylinder will be very close to zero. However, as one looks at the field vectors, it appears that the space inside the cylinder is either in tension or compression. The analogy is to take a stiff rod in both hands and either push the two ends toward each other or attempt to pull them apart. The net force on the rod is zero so it is not translating in space. However, the internal stress is not zero while the individual forces are in place. If this stress exceeds the limits of the rod material, the rod will be changed in length, even though the net translating force has remained zero. Similarly, Bearden believes that the internal stress produced by the opposing magnetic fields will cause a cohering of the virtual particles of space such that macroscopic effects will be observed. It is plausible that special frequencies, waveforms, and coil configurations will be required. There may be a minimum signal level before any effect is observed, much like the Zener effect. Feedback may be required, so that the effect will build up like an oscillator.

It is obvious that, even if Bearden's hypothesis is correct, it may be very difficult to get reproducible experiments. It is rather like trying to build an oscillator. One needs an amplifier, a method for feedback, and the correct circuit layout. As many students can testify, even with a good amplifier and the proper theory, poor circuit layout can easily keep the oscillator from working. So we would expect to see reports of working devices and other reports of nonworking devices until equipment and theory are much better developed. A given inventor may have a working prototype, but may not be able to scale up to an economical size because of the lack of an adequate theoretical development. This may be the case with Bearden and his associates, since he states [5, page 22] the following. "Several inventors, three of whom I work with in one respect or another, now have demonstra-

tion models of such machines, which take diverse forms." This was written in December 1987, but there has not yet been any public display, implying a hangup either in reproducibility or in patenting the concept.

Summary

We have looked at three leaders in the search for a new energy source, whose work spans a full century. There have been dozens of other searchers and several organizations devoted to publishing literature on the subject. Involvement ranges from the backyard inventor with no technical background up to the PhD-level engineer or physicist. There is a great deal of *noise* in the literature. Some concepts are obviously nonsense. Others will prove to be in error. But, is there any signal in all the noise? There is, if Tesla, Moray, and Bearden are correct. The potential payoff is enormous, so the search should be continued if there is any chance at all of success.

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