

Recent Developments in Perpetual Motion

The energy crunch breathes new life into the perpetumania movement

Robert Schadewald

"Amazing New Motor Powered Only by Permanent Magnets," proclaimed the cover of the Spring 1980 *Science and Mechanics* magazine. "15-Hp Output Drives 5000-Watt Home Generator." The cover illustration shows a cutaway view of the marvelous magnetic motor, which is connected to a generator by a V-belt. The device is a classical perpetual-motion machine.

Many people seem to think that the search for perpetual motion ended in failure long ago. They are half right. Failure is perpetual, but there's no end to the search. Indeed, the modern energy crunch has brought renewed interest. Backyard mechanics and others with considerably more sophistication have been dusting off rusty old ideas and giving them new coats of paint. Investors line up, checkbooks in hand.

Modern inventors usually reject the term "perpetual motion." They prefer to talk about tapping energy sources not yet understood. Nevertheless, they direct their efforts toward violating either the first law of thermodynamics (conservation of energy) or the second law (principle of increasing entropy).

I have files on nearly a dozen recent perpetual-motion schemes. The three I will discuss here, the "amazing magnet motor" and two others, are all perpetual-motion machines of the first kind.

Robert Schadewald is a free-lance science writer with a special interest in offbeat claims.

When I first began reading the *Science and Mechanics* article about the magnetic motor,¹ I suspected that it was a sophisticated parody. Howard Johnson, inventor of this marvelous motor, makes the obligatory attack on scoffing scientists and then suggests that his device might derive its energy from a “previously unnamed atomic particle.” But neither Johnson nor writer Jorma Hyypia is kidding. Indeed, U.S. Patent #4,151,431, issued to Johnson after a long battle with the Patent Office, protects the principle of the device.

“Principle” is the key word here, for the motor shown on the cover and first page of the article doesn’t exist. Instead, Howard Johnson has some crude devices that he claims illustrate the principle by which such a motor could be built. The models consist of arrays of permanent magnets held together with “sticky tape and aluminum foil.”

Two of the devices are linear arrays. The more sophisticated of these has the magnets mounted below a horizontal section of model-railway track. A model flatcar carrying magnets and a weight forms the moving part of the device. According to Hyypia, “The weight is needed to keep the vehicle on the track, against the powerful magnetic forces that would otherwise push it askew.” When he placed the car on the track, Hyypia could “feel the powerful magnetic forces at work.” The little car zipped off the end of the track when he let go.

Johnson also has a device made of vertically mounted magnets arranged in a circle on a turntable. When a hand-held “focusing magnet” is positioned inside the circle, the device begins rotating. Hyypia writes that for the demonstration he held the focusing magnet at least four inches away from the ring magnets. When the focusing magnet was reversed, the turntable rotated in the opposite direction.

Besides photographs of these three devices, the article contains a drawing of yet another device, slightly different. Thin, wide magnets are mounted, south pole down, to a high permeability support plate. These stator magnets, mounted in a linear array, have spaces between them that (confusingly) vary in different parts of the illustration. An arcuate armature magnet is shown moving above them from right to left with the “complex magnetic forces interacting to create off-balance effects.” A table is given showing the field strengths between the poles of the armature magnet and the stator magnets in various positions. The table also shows a “constant off-balance situation,” according to its caption.

This last device, with its support plate bent into a ring, is essentially what is shown on the cover of the magazine. It is the magnetic analog of the classical overbalancing wheel.

As it happens, I personally invented the paradigm of overbalancing wheels, whose design I magnanimously assigned to the public domain as of

April 1, 1978.² The Schadewald Gravity Engine, based on Dirac's conjecture that the universal gravitation constant G is in fact decreasing, is both simpler and theoretically more sound than Johnson's device. I sent a copy of my paper about the SGE to Joseph Daffron, editor of *Science and Mechanics*, informing him of this. He returned it with a bemused note.

Nearly three months later, assuming that the roof must have fallen in on *Science and Mechanics* as a result of their endorsement of a perpetual-motion machine, I called to verify my suspicions. I was in for a surprise. Associate editor Stephen Wagner informed me that the writer, Jorma Hyypia, was a former research scientist and that they were confident of his judgment that nothing was amiss. He said they intended to publish a follow-up on Johnson's device as soon as there was something to report.

I finally reached Howard Johnson by phone. Among other things, I asked him how long he thought the motor he was proposing would run. He replied that there seemed to be no sign of deterioration in the magnets he had experimented with. What does that have to do with anything?

"Some folks have come up with the idea that you can only get as much energy out of a magnet as it took to magnetize it," Johnson told me. "I don't think that has anything to do with it. The energy you're using is not the energy you used to magnetize it. You're using the energy of the electron spins, which were already spinning before you did anything. You only aligned them."

"But doesn't the whole idea smack of a free lunch?" I asked.

"We don't advertise any free lunches," he said, "and we don't advertise perpetual motion, either. Because that's a term you only use when you want to insult somebody. When you talk about nuclear energy, you don't hesitate to believe that it lasts for a long time. This isn't any more remote than that."

Apparently there are manufacturers who don't consider it remote. Though he doesn't deal with individuals, Johnson is already licensing his invention to corporations. He wouldn't name names, but he told me that he was considering a *down payment* of \$5 million offered by one potential licensee.

"I think some of the companies getting under way will be merchandising within 18 months," he said. "Some of that depends on how fast they can get the proper kind of magnets so that it won't be prohibitively expensive. Motor-generator sets will probably be the first thing."

The day such a motor-generator set goes on the market, I will eat my best shirt without catsup. I will also take out a full-page ad in the SKEPTICAL INQUIRER apologizing for my rejection of Johnson's invention and my acceptance of the first law of thermodynamics.

Meanwhile, I don't profess to know how Johnson's models work.

Jorma Hyypia's description of the forces encountered in placing the car on the linear track suggests that doing so puts energy into the system. It is therefore not surprising that the car takes off when released. As for the rotating array of magnets, I can't offer an opinion without examining it.

Magnetically powered perpetual-motion machines are, of course, old hat. But perhaps the oldest perpetual-motion schemes involved attempts to make a water-wheel pump its own water while also providing an energy output.

Want to buy a "self-contained hydroelectric power system"? Some time late in 1977, Mid America Dairymen, Inc., one of the nation's largest dairy co-ops, put up a reported \$150,000 for a one-third interest in such a system.

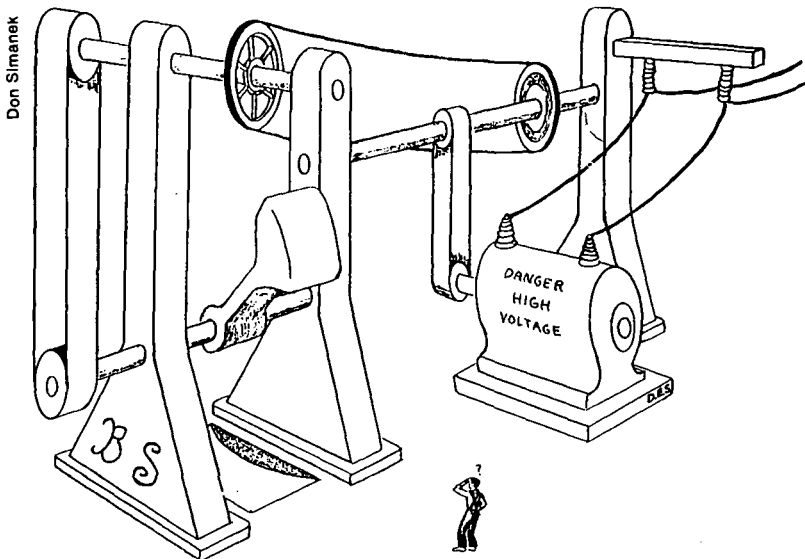
Inventor Arnold Burke came to Mid Am's attention in a magazine article about another one of his developments. According to the article, Burke claimed to have a 94-horsepower engine that used a special catalyst to burn oxygen and nitrogen, recycling the exhaust gases and burning them again and again. When he was approached about the engine, however, Burke claimed that it needed a lot of development work. Then he told them about his hydroelectric system, which he said could be ready for the market in a very short time.

Picture a 100-gallon water tank mounted on an 18-foot tower. Water flows down from the tank through the coils of an "amplification unit" and into a small water turbine. The turbine drives a generator, producing electricity to charge a battery pack, which in turn powers a solid-state 120-volt AC converter. Discharge water from the turbine flows into a *self-acting* pump, which then pumps the water up into the tank without using any energy!

Mid Am officials thought that such a system would be the answer to farmers' soaring electricity bills. Burke claimed that, retailing for about \$1,500, the system could produce 1,500 (later revised to 3,000) kilowatt-hours per month at a cost of only 50 cents a month for bearing grease. He claimed that the key to the system, the self-acting pump, was something he'd invented years before to drain a gold mine in Colorado. The rest of the components could be purchased off the shelf. He didn't have a prototype, but with a laboratory and a little seed money—.

Redel, Inc., was organized with Arnold Burke as president, chairman of the board, and majority stockholder. Burke built a laboratory in Temple, Texas, and began work on a prototype.

Mid America Dairymen wanted to keep a low profile while the system was in the developmental stage, but that was not Arnold Burke's way. Burke sought out television personalities and writers who could give him



The Schadewald Gravity Engine coupled to an electric generator. There seem to be a few aspects of engineering design that could be improved here.

publicity. Steve Prentice, a Texas writer, wrote several enthusiastic stories for national farm periodicals.³ One of these, in *Farm Show* magazine, came to my attention in August 1978.⁴

Since I live about 1,200 miles from Temple, Texas, I began doing what investigation I could by phone. Through a stroke of luck, I made contact with a Texas journalist, Deborah Weathers, and interested her in the story. She interviewed Arnold Burke, “admired” his machine, and gathered background information. By November 1978, we had the *real* story of the “self-contained hydroelectric system,” only to discover that nobody cared!

We finally sold a carefully worded article to the *Minneapolis Star* (for less than our long-distance expenses).⁵ In it, we gently suggested that the self-contained hydroelectric power system might not be all that Mid Am hoped it would be. I also called Mid Am and gave them some information I couldn’t (and still can’t) print.

As an exposé, our story fell flat. I got letters from two people who wanted me to examine and write about *their* machines and a nasty call from Mid America Dairymen informing me that I had “done them wrong” and that they still had full confidence in Mr. Burke and his machine.

By this time, it was some months since Arnold Burke had promised to deliver a “proof-of-concept” model of the machine to Mid America Dairymen’s Springfield, Missouri, plant. This device, sealed so as not to reveal the secret of the “self-acting pump” to Mid Am personnel, was supposed to be set up in the middle of the plant and to start operating.

Then Burke would leave, and the machine would put out its rated power for 30 days without anyone touching it.

But instead of a proof-of-concept model, Mid Am got nothing but excuses from Burke. For a machine that was supposedly being built mostly from off-the-shelf parts, it seemed to take an eternity to finish. Finally, after several more months of delays, Burke and Mid Am parted company and Burke began telling people he would never again deal with big companies.

The Texas attorney general's office looked into Burke's relationship with Mid Am in 1978, but since Texas consumer laws don't protect corporations they dropped the investigation. After the break with Mid Am, however, Burke began selling distributorships for his device to individual investors. In November 1979, the Texas attorney general filed a civil action alleging that Burke and his associates had collected \$800,000 in licensing fees under false pretenses, and asking for an injunction prohibiting further marketing of the machine.

By this time, the device was no longer just a "self-contained hydro-electric power system." Burke had christened it "Jeremiah 33:3," claiming that this Bible verse—"Call unto me, and I will answer thee, and shew thee great and mighty things, which thou knowest not"—was his inspiration for inventing the machine. Many of Burke's Bible Belt investors were as impressed by his piety as by his mechanical ingenuity.

The trial of Jeremiah aroused tremendous public interest in Belton County, Texas, and the courtroom was packed with Burke's investors and supporters. Here, his flair for publicity stood him in good stead. At one point, he pulled up a flat-bed truck loaded with machine components in front of the courthouse, and court convened on the lawn for a demonstration. Jeremiah, however, remained in the lab. Burke refused to reveal Jeremiah's secret, and his attorneys vigorously resisted a motion to have a court-appointed expert examine it. They lost.

On Wednesday, December 19, a court-appointed engineer began taking Jeremiah's pulse with an amplified stethoscope. He concentrated on a metal box in the lower tank of the machine, which Burke refused to open on the grounds that it would reveal his yet-unpatented secrets. In the course of the examination, Assistant Attorney General Roy Smithers found a concealed wire leading from the machine's upper reservoir.

From then on, it was all downhill for Jeremiah. Followed in one direction, the wire led via a circuitous route to a battery pack concealed under a bunk in an adjoining room. In the other, it led to an electric pump concealed in Jeremiah's guts.

Arnold Burke was arrested on the spot. The next day, the court froze his assets and issued an injunction prohibiting him from further marketing

the machine.

But many of Burke's investors did not lose faith. They insisted that Burke had only installed the electric pump to prevent the court-appointed expert from discovering the real secret of the machine. The attorney general had difficulty finding someone to sign a complaint, but two investors finally did so in early January, and Burke was indicted on two counts of theft of over \$10,000. Eventually, there were six more indictments on the same charge. The attorney general added two counts of perjury, based on Burke's testifying under oath that Jeremiah required no external source of electrical power.

Arnold Burke's first trial, on one count of fraud, began in late May 1980, with the courtroom in Belton, Texas, reportedly packed with his admirers. It ended with the jury deadlocked 11 to 1 for conviction. During the trial, Burke's supporters raised another \$250,000 and bought out disgruntled investors for 66 cents on the dollar!

The futures of Arnold Burke and Jeremiah remain clouded. Burke was scheduled for retrial. He insists that he will be vindicated. His assets are no longer frozen, although he is still enjoined from selling any further interests in the machine. He is reportedly hard at work in his laboratory making improvements in Jeremiah's design.

Neither Jeremiah nor the Johnson device will ever reach the market. Some perpetual-motion machines do, however. Consider the Frenette Friction Furnace.

The Frenette Friction Furnace produces heat using two concentric metal drums with heavy oil between them. When the inner drum is turned by an electric motor, the oil heats up. It doesn't take a post-doctoral fellow in thermodynamics to figure out that the device will convert essentially 100 percent of the electricity it uses into heat, much of it probably put out by the coils and bearings of the electric motor. A common electric resistance heater will accomplish precisely the same conversion at a fraction of the cost and with no moving parts.

Why do I call it a perpetual-motion machine? Because before the device went into production, inventor Eugene Frenette claimed that a 200,000 Btu model could be built that would plug into a "regular electric outlet." That claim allows a simple calculation. Wall outlets are wired for either 15 or 20 amperes, but they can handle only 80 percent of that current as a sustained load. Then $0.8 \times 20 \text{ amps} \times 120 \text{ volts} = 1,920 \text{ watts}$ maximum sustained output, or 6,550 Btu per hour. Thus Frenette was in effect claiming an energy efficiency of at least 3,000 percent.

The Frenette Friction Furnace is currently being manufactured for, and sold by, Hedstrom/Powell Inc., of Des Moines, Iowa. In its literature, Hedstrom/Powell wisely claims only 100 percent efficiency for the Fric-

tion Furnace. But it also gives comparisons and testimonials suggesting that the friction furnace will produce the same amount of heat as a conventional electric heater while using substantially less electricity. And Lou Powell told me on the phone that their 3-horsepower unit will heat a 1,200-square-foot house, “much more than seems possible” from its Btu equivalent. Indeed!

The claims made for the Frenette Friction Furnace may seem plausible to those lacking a scientific background, but not the Johnson or Burke devices. Most people couldn’t state the first law of thermodynamics on a bet, but they instinctively know that there’s no such thing as a free lunch.

There is another sort, though, perpetually suspicious of power and authority. These people seem to think the laws of thermodynamics are part of the oil company plot to suppress the legendary 50 miles per gallon carburetor. If they don’t seek perpetual motion themselves, they are prepared to accept someone else’s “discovery.”

I believe that the *persona* I assumed in my Schadewald Gravity Engine spoof in *Science Digest*—earnest, slightly paranoid, unselfish but still seeking recognition—is fairly typical of the breed. Certainly it struck a responsive chord with those readers taken in by the hoax, for they inundated me with letters, some bestowing upon me embarrassing accolades for my genius and generosity. The wording of most of the letters suggests that the writers were youthful or uneducated. But I also got two long-distance phone calls from engineers!

Clearly, the pursuit and acceptance of perpetual motion are not confined to the uneducated. Inventor Howard Johnson and writer Jorma Hyypia both have strong technical backgrounds. An engineer from Virginia Polytechnic Institute has endorsed Johnson’s magnetic motor. The man who brought Arnold Burke to Mid Am has a degree in physics. And, at the civil trial of “Jeremiah 33:3,” a chemistry professor from Arizona State University testified on behalf of the machine.

What’s the prognosis for perpetumania? The hardcore believers are probably incurable. As for the many others sometimes taken in, consider how it happens: The machines are often proposed or endorsed by people who apparently are experts. People see (or more likely read about) convincing demonstrations. The mass media publicize—and sometimes exploit—the wondrous new inventions. And scientists, hearing about them, usually shrug and go about their business instead of taking the time to counter the claims.

Haven’t we seen this syndrome before?

Acknowledgments

Albert W. Kuhfeld, a physicist with the Science Museum of Minnesota, brought both the Johnson and the Burke devices to my attention.

Donald E. Simanek, professor of physics at Lock Haven State College, Pennsylvania, made several helpful suggestions about the Johnson magnetic motor.

Deborah Weathers, now an editor with the *Pine Bluff Commercial*, did most of the legwork on the original Burke story.

Jim Phillips of the *Temple Daily Telegram* covered the unmasking of Jeremiah 33:3 and filled me in on subsequent developments.

Notes

1. Jorma Hyypia, "Amazing Magnetic-Powered Motor," *Science and Mechanics*, Spring 1980, p. 45ff.
2. Bob Schadewald, "'What Goes Up' . . . Is Basis for a Breakthrough!" *Science Digest*, April 1978, pp. 9-10.
3. For instance, *The Dairyman*, April, May, July, and November 1978.
4. Steve Prentice, "'Breakthrough' System Promises Low Cost Electricity," *Farm Show 2* (4) (1978).
5. Robert Schadewald and Deborah Weathers, "Electricity that's Penny-Cheap? Inventor's Scheme Stirs Up a Perpetual Commotion," *Minneapolis Star Saturday* magazine, December 2, 1978, pp. 12-13. ●

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