

"The Mystery and Legacy of Joseph Papp's Noble Gas Engine"

by Eugene F. Mallove

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If you thought that the saga of cold fusion was bizarre, labyrinthian, and astonishing with its mother-lode of unexpected findings --- from nuclear-scale excess heat to the rebirth of alchemy in low-energy nuclear transmutation, discoveries alternately persecuted or ignored by the scientific establishment --- the cold fusion adventure doesn't hold a nuclear candle to the story of Joseph Papp and his noble gas engine. The Papp engine saga seems to have had its roots in the 1950s, but it only came into public view in 1968. And, strangely enough, there may well be an underlying physics that links elements of the two stories and their profoundly heretical science. Pathological skeptics of cold fusion --- and perhaps some cold fusion researchers --- may laugh at or recoil from this synthesis, but they will be treading on thin ice.

One of the best overviews of the Papp story appeared in California's San Jose *Mercury News* newspaper on August 27, 1989. We have reprinted David Ansley's exemplary account, which was triggered by the cold fusion announcement some four months earlier (p. 14). Read Ansley's piece to get the gist of what had happened up to mid-1989 with the Papp engine. We also reprint a well done story that ran much earlier in *Private Pilot*, in December 1968 (p. 49). But the Papp saga has progressed far beyond those days, hence we are devoting a substantial portion of this issue of *Infinite Energy* just to begin to recount the tale of the Papp engine as it has never been done before. There is very likely to be more to come... so stay tuned. (We are looking into the possibility of preparing a DVD made from video tapes of Papp's demonstrations already in our possession and from present day experiments, if permissions can be obtained.) This editor has been aware of claims about the Papp engine since about 1992, but it has only been within the past three years that sufficient information has emerged to change my view from curious onlooker to acceptance of the engine's validity.

The basic "problem" with cold fusion is, of course, that water in contact with metals with a bit of low voltage electrical excitation is not supposed to make nuclear reactions and release huge thermal excess energy per atom of presumed reactant. The problem with Papp's noble gas engine is that the noble gases employed --- argon, helium, krypton, neon, and xenon --- are essentially non-reactive chemical elements (except in certain exotic combinations known to modern chemists); that's why they are called noble. How can such gases, "pre-treated" or otherwise, explode with unusual violence and drive a reciprocating single-cycle engine --- a retrofit device from an ordinary gasoline engine (lubricated with oil to be sure), but one with no cooling system, no fuel system, and no exhaust? On its face, Papp's engine appears inconceivable --- until the evidence is weighed very carefully. Once the battery-driven electric starter revved up the Papp engine (according to dozens of initially skeptical witnesses), the engine --- equipped with an alternator --- ran with no outside electrical input. And, even if such "miracle" reactions

of noble gases should produce interminable explosions from a tiny volume of gas, pushing pistons and driving a large flywheel, why didn't such an engine run very hot? It didn't. What about the supposed need for a much lower temperature reservoir to make this "heat" engine work at all? If the engine is a monumental "fraud," it is a very, very challenging one to try to pull off.

In the Beginning ~

How to begin? Let's try this synopsis: A technically schooled draftsman and ex-pilot, Josef Papp (pronounced "Pop" in proper Hungarian), emigrated from Hungary to Canada in 1957 after the ill-fated anti-Communist revolt and Soviet invasion of his country. Perhaps he may have made paper or microfiche copies of documents relating to some sensitive R&D projects in Hungary and he took them with him to the New World? That's only educated speculation. Otherwise, if his independently developed ideas really worked, as they seem to have, he was either extremely lucky in finding a hidden secret of Nature, or he was an unfathomable genius. He did not seem like the latter. From all accounts, he was an extremely paranoid, very unstable, selfish, and unpredictable man, who was probably one of his own worst enemies. There is little evidence that he understood the physics of what he had, but however the process was developed --- it seemed to have worked in a way that seems "too good to be true" --- it was an almost fully formed new energy technology that came very close to coming under the wings of some of the world's largest technology corporations.

The story entered its second phase with what seems like a preposterous diversion: In Canada in the early 1960s, Papp worked secretly to develop a mysterious, sleek "submarine" that looks like something out of a "Star Wars" movie. He claimed that he would cross the Atlantic with it in much less than a day --- that's what he told Canadian television (It was a big media story in Canada in the summer of 1966, but most of you probably missed it, though Papp wrote a now hard-to find book about the episode, entitled *The Fastest Submarine*, Ballantine Books U7080, 1967). Then he disappeared. Within days, Papp was found by authorities bloodied and floating on a rubber raft off the coast of France. Papp claims to have made the ocean crossing in only thirteen hours after he left North America. Where was the wondrous submarine? "Lost at sea," of course, according to Papp. The fantastic claim was soon debunked in a very embarrassing way --- but, in truth, no one has ever found the submarine either in Canada or in the Atlantic. Why Papp thought he could get away with this stunt and how this episode seems to clash with what comes next --- the scientifically interesting part of the Papp saga --- is a mystery and may forever be. Papp is dead --- cancer took him on April 13, 1989, three weeks after Fleischmann and Pons announced cold fusion.

But apart from this embarrassing, bizarre episode with the submarine, Papp left behind one of the most tantalizing legacies in the history of free energy: There exists nearly rock-solid evidence now that Papp really had managed to build a robust engine of over 100 horsepower (75 kilowatts) that was "fueled" by a mixture of, we believe, "pre-treated" noble gases (probably mixed with some air). Though it had no exhaust and no cooling system, it had huge torque even at low RPM (776 foot-pounds at only 726 RPM,

the result of one certified test --- see Exhibit A.) [Exhibits from this Introduction to the Issue 51 cover story are not available on the website.] Dozens of astonished engineers, scientists, and investors --- even a Federal judge with an engineering background was blown away by it --- have seen the engine working in closed rooms for hours, which would have killed its occupants with toxic gases had it been a hydrocarbon-fuel engine. There was absolutely no exhaust, no visible provision for any exhaust! The engine ran cool --- only about 60°C (140°F) on its surface, it has been reported by several reliable observers. All these people, who had years to try to debunk it, became convinced of the engine's reality. They all failed to discover a hoax. But here is the ultimate triumph of the Papp engine: Today, ongoing research in the United States --- totally independent of Papp and his former financial interests --- has proved conclusively that noble gases, electrically triggered in various ways, can indeed explode with fantastic violence and energy release -- melting metal parts and pushing pistons with large pressure pulses. Some of the people performing this work, or who have evaluated it, are from the cold fusion field, others are experienced plasma physicists. Some will allow their names to be revealed, while others in senior positions at major research institutions must remain anonymous for now. I am confident, however, that these scientists will eventually "go public." They should, when circumstances permit.

Two Explosions, One Death ~

Apart from the intense contemporary work to resurrect the Papp engine in its full cycling functionality and the independent certification test in 1983 (see p. 9), what other proof is there that Papp's engine was for real? Sad to say, this evidence is the death of one person and the severe injury of three others at a public demonstration of the engine on November 18, 1968 in Gardena, California. At that event, the engine exploded with an evident energy release that no internal combustion engine could touch. Read the eyewitness testimony of engineer Cecil Baumgartner (p. 31) in my interview with him this year. He was representing the top management of the TRW aerospace corporation that day. The previous month (on October 27, 1968) Baumgartner and others had observed one of the detonation cylinders of the engine test fired in the California desert. In full public view, just a few cubic centimeters of noble gas had been admitted with a hypodermic needle to the sparking chamber, and this made the thick steel-walled chamber peel back like a banana when the device was electrically triggered. The collaborating observers from the Naval Underseas Warfare Laboratory (as the Pasadena, California lab was then called), who attended the desert test, had earlier sealed the chamber so that Papp or others could not insert illicit explosives as part of a hoax. Their names, according to Baumgartner, were: William White, Edmund Karig, and James Green.

Feynman's Mistakes and the Recovery ~

But at the public meeting the next month at which the fatality occurred (see the local newspaper account of the fatality and injuries-p. 30) was Caltech physicist Richard P. Feynman (1918-1988), who had worked on the Manhattan atomic bomb project in World War II. Before even arriving at the demonstration, Feynman assumed that the Papp engine, whose operation he was about to witness, had to be part of an elaborate hoax. We

know this because he recounted his reactions during the episode in his widely circulated internet account touted by the "skeptic" community (see "Mr. Papf's (sic) Perpetual Motion Machine," p. 29).

But here is the central problem with Feynman's analysis (which has many other errors of fact and logic embedded in it): There was a court action against Feynman by Papp and his backer, Don Roser of Environetics, Inc., as a result of Feynman's inept attempt to disprove the Papp engine with his unauthorized pulling of an electric control-circuit wire that Feynman egregiously imagined had to be powering the engine. It was unfortunate for Feynman that the wire's gauge was far too thin even had there been a secret electric motor within the retrofit Volvo engine. Furthermore, as you will read, the engine kept running even after the flimsy wire was removed. Feynman asserted that Papp most likely had deliberately planned to blow up his own engine to avoid subsequent discovery of the "fraud"! And, Feynman acknowledges that there was an out-of-court settlement with Caltech. Surely, had there ever been the slightest piece of evidence that conventional explosives blew up the Papp engine that day, Caltech would most certainly not have had to settle. Papp would soon have been charged with manslaughter, no doubt, and Feynman would surely have cited this evidence publicly. He was not one to shrink from dramatic gestures. Caltech also had the motive and the means to skewer Papp with the kind of evidence that is routinely gathered by police departments and crime labs following explosion accidents.

However, all records of the investigation into the accident appear to have vanished down some kind of a memory hole. I believe they exist somewhere, but we have not been able -- yet --- to obtain them. On June 29, 1998, Caltech's very helpful Associate Archivist, Shelley Erwin, faxed me: "Well, the mysterious affair with Mr. Papp/Papf continues to remain mysterious. I have found nothing in the Feynman papers that refers to it. Nor is there any obvious reference to Mr. Papp or the lawsuit in administrative or publicity papers from the time. We do not have a clippings file for the 1960s, so that is one type of resource I did not investigate... I think I have done all I can here, without any useful result. We would be interested to know how your search comes out --- if indeed this is a true account. I wish I knew."

I made more recent contact with various Caltech offices, which could not provide me with any records --- not even its public information office had newsclips, and efforts to locate official accident reports in California have come up dry. Some of these may have been destroyed, according to some police departments contacted. After all, this is an accident that happened thirty-five years ago. But the point is that nowhere, so far, do we have any evidence that the explosion was a result of illicit explosives. Failing such direct evidence of hoax, the proved violence of the explosions --- the November 1968 and the October 1968 ones --- strongly point to the reality of the Papp process. But we also have the contemporary laboratory work that establishes convincing evidence --- visual and by instrumentation --- that noble gases can be made to explode and achieve over-unity. Heroic work on a shoestring budget over the past few years is recounted in broad scope by researchers Mark Hugo and Blair Jenness in Minnesota (p. 51). We hope to feature their work in greater depth in future issues. Heinz Klostermann of California, whom I met

two years ago, has been of great assistance in assembling some of the information that went into this issue of Infinite Energy. On p. 55, he discusses his broad knowledge of many of the groups working in the U.S. in the past and today in the effort to recover the Papp engine technology. He has begun his own independent initiative.

Two anonymous Ph.D. investigators circa 2000, with prominent positions in the cold fusion field, certainly estimated over-unity factors beyond 10 and perhaps even 100 --- for what may well be a suboptimal version of the Papp noble gas process. To run a cyclic 100 HP engine as Papp did would require detonation energies possibly far beyond these preliminary factors, but remember: no one who is attempting to recover the technology knows the exact pre-treatment process and gas mixture that Papp employed. The patents, so far, have not been adequate to learn exactly what was done. Finally, the eyewitness accounts, as well as the dynamometer test of 1983, give further support for the validity of the Papp technology.

Feynman is widely known today for his aid in helping to resolve the space shuttle Challenger accident of 1986. The brilliant, entertaining, passionate, and often self-effacing physicist with the Far Rockaway, New York accent won the Nobel Prize for physics with Julian Schwinger and Sin-Itiro Tomanaga in 1965, three years before the explosion of the Papp engine in Gardena. He is rightly considered to be a very great scientist, whose quest to expand the frontiers of physics and to convey the excitement of science to the public was legendary and noble. In fact, I had often thought that if Feynman had lived into the cold fusion era, he might have set some of the anti-cold fusion bigots straight. Several years before Feynman's Nobel Prize award, in April 1963 in several wonderful lectures that have been reprinted in a book, *The Meaning of It All* (Addison-Wesley, 1998), Feynman made these wise observations

"The exception tests the rule." Or, put it another way. "The exception proves that the rule is wrong." That is the principle of science. If there is an exception to any rule, and if it can be proved by observation, that rule is wrong. (p. 16)

The rate of the development of science is not the rate at which you make observations alone, but more important, the rate at which you create new things to test. (p. 27)

There is no authority who decides what is a good idea. We have lost the need to go to an authority to find out whether an idea is true or not. We can read an authority and let him suggest something; we can try it out and find out if it is true or not. If it is not true, so much the worse --- so the "authorities" lose some of their "authority." (p. 21)

Indeed, the "authorities" of modern physics seem to have lost their authority completely. If one of its most dynamic and iconoclastic members, Feynman --- a hero to physicists as well as to the general populace --- can have made such a horrible error in judgment in the matter of his observation and actions at the Papp engine demonstration in 1968, then there is real trouble, and this is now proved. Feynman's tragic mistake would be just that, by the way --- a mistake whether or not the Papp engine is real. If it is real, so much the worse for Feynman's legacy, for science, and for civilization. The inadequate methods by

which Feynman rendered a snap judgment on the Papp engine that day reflected poorly on him; his methods were incapable of discovering the truth about this device. And then there are the questions about what did Feynman know and when did he know it, concerning any accident reports that may have been available to him.

In retrospect, this 1968 event seems like a foreshadowing of many other horrors that were to come in the 1980s, through the 1990s and beyond --- vicious persecution of the cold fusion/low-energy nuclear reaction field by "authorities" and their followers. The so-called "skeptics" of CSICOP and elsewhere, who chose to use Feynman's reflections on the Papp demonstration as an example of how science should be done, should hide their heads in shame, but they won't. They will be outraged that one of their icons and their belief in the impossibility of new energy sources are found wanting. They will not admit this, of course.

The Patents ~

Joseph Papp was issued three United States patents for his process and engines, one of which is reprinted in full and the others are briefly discussed and the introductory parts reprinted (p. 21):

"Method and Means for Generating Explosive Forces," applied for on November 1, 1968, granted as U.S. #3,680,431, August 1, 1972, assigned to Environetics, Inc. of Gardena, California; Papp declares the general nature of the noble gas mixture necessary to produce explosive release of energy. He also suggests several of the triggering sources that may be involved. There is little doubt that Papp is not offering full disclosure here, but there is no doubt that others who have examined this patent and followed its outline have already been able to obtain explosive detonations in noble gases. Caution: Anyone who undertakes to try to duplicate this process must be very careful about safety issues.

"Method and Means of Converting Atomic Energy into Utilizable Kinetic Energy," applied for on October 31, 1968, granted as U.S. #3,670,494, June 20, 1972, and assigned to Environetics, Inc.

"Inert Gas Fuel, Fuel Preparation Apparatus and System for Extracting Useful Work from the Fuel," applied for September 4, 1980, granted as U.S. #4,428,193, January 31, 1984, and assigned to Papp International, Inc. of Lincoln, Nebraska. This is a very lengthy patent, filled with many insights about how his sealed, non-cooled engine process may have worked.

One of the high points of subsequent activity by Papp and his colleagues was the independent certification testing in 1983. Thanks to the late Dr. Paul Brown and to Jack Kneifl, I have had in my files for several years photocopies of the actual documentation of the certification test, which was done in Oklahoma. It has been circulating among those who have been interested in reviving the Papp technology, and includes Chemistry Professor Nolan's impressive C.V. The affidavit is reprinted in Appendix A.

In Search of an Explanation ~

Assuming that the Papp engine phenomena that have been observed are valid, no one can claim to have a satisfactory and comprehensive explanation for what is going on. In my view, the physics associated with the detonation, light emission, and other phenomena in these noble gas explosions is quite beyond contemporary understanding. It is of interest that Dr. Randell Mills and his colleagues at BlackLight Power Corporation have observed excess heat phenomena associated with microwave stimulation of helium and hydrogen mixtures, but not krypton and argon mixtures. I'm not sure that this has any direct bearing on the Papp conditions, but I mention it for completeness.

Dr. Paulo and Alexandra Correa of Canada were kind enough to abstract for inclusion in this issue of Infinite Energy (p. 61) a report that they prepared in the mid-1990s concerning the Papp technology --- or at least a crude copy of it. This was based on a limited view; they were given only a video tape, the performance claims, and the patents. They discuss the differences between the plasma and energy phenomena they have pioneered in their PAGDTM excess energy technology, and what they could gather from the Papp technology experimenters' claims.

It is my view that to explain the Papp engine, a very radical departure from conventional understanding of nuclear physics, atomic structure, electricity, and the vacuum state will be required. The general class of models will be those that explain subatomic "particles" and how they interact as manifestations of an aether physics.

The Scandal of Official Inaction ~

There can be no greater indictment of our energy and science advisory bureaucracy in Washington, D.C. than in the host of letters that made urgent pleas that something be done about the Papp engine. On the positive side, there were letters asking for information about it, such as the one from the U.S. Army shown in Exhibit B, but the other responses evidence the kind of grave science and technology policy problems in government that would emerge in the cold fusion era. Some letters show that the same people in DOE who obstructed cold fusion acted earlier to obstruct a resolution of Papp's claims! Exhibits A-I are our collection of the text of annotated letters; copies of the originals are in our possession. We thank those who divulged these letters on behalf of the search for truth.

The letter in Exhibit C was evidently written by one of the associates of Navy people who supervised the sealing of the Papp "cannon" so that no illicit explosives could have been inserted in the Papp device that was fired in the California desert.

The letter in Exhibit D shows the sincere interest of another aerospace corporation, other than TRW, which had dropped the Papp engine after the explosion in November 1968. It also proves that the litigation with Caltech was still ongoing in the fall of 1970.

A do-nothing letter from DOE's legal staff, in response to one of several letters that were sent to President Jimmy Carter is shown in Exhibit E.

John Deutch, an MIT Professor who was serving in DOE during the Carter Administration, dismisses the Papp engine in his thinly disguised negative letter to Senator Hatch of Utah (Exhibit F). Ironically, Deutch would later play a two-faced role in the cold fusion saga as it unfolded at MIT when he was Provost there in 1989 (see IE #24). He later became Director of the CIA, but was caught in an egregious computer security lapse, which could have landed him in jail.

In the letter in Exhibit G, a sincere U.S. Navy Rear Admiral writes to President Carter in an effort to focus his attention on the Papp engine. It appears that Papp may have misguided McMillian about his credentials (Papp had no doctorate) and the date of his arrival in the U.S.

An insulting letter from the DOE (just months before cold fusion was announced) to one of the witnesses to the Papp engine testing is shown in Exhibit H. George Lewnes, who had an engineering background, had seen the engine run in Florida. Here DOE touts its hot fusion program as the only possible route to fusion! Always the same excuse for not investigating new processes.

A very late letter --- 1992 --- from Jack Kneifl in Nebraska, who was part of a team that was attempting to recover the Papp technology, is shown in Exhibit I. Admiral Elmo Zumwalt was a well respected and famous Naval officer. This letter shows that anti-cold fusion DOE people --- Drs. Polansky and Ianniello --- were also obstructing the Papp engine recovery.

Summary and Looking Forward ~

There is now a staggering amount of good information available, which at a bare minimum would justify a thorough review of the Papp engine matter by official agencies such as the U.S. Department of Energy and military research organizations such as DARPA. There is significant evidence for the release of heretofore unknown explosive energy from noble gas mixtures. The energetic level of these reactions on their face, if confirmed by independent review, may have serious national security and global security consequences (especially in this age of terrorist threat --- use your imagination). But the cat is out of the bag, and it cannot be put back. One hopes that the civilian uses of this potential technology will far outweigh the military hazards.

Joseph Papp was a "hero" to have brought this technology to the New World, but his outrageous behavior at many turns helped prevent scientific truth from emerging. Yet at long last, the truth is coming out. There needs to be a wide and deep review of the evidence. Unfortunately, the experience of the cold fusion/low-energy nuclear reaction (LENR) field over the past fourteen years, in trying to get an impartial DOE review of now proved and replicated LENR experiments, does not inspire much confidence that DOE or other official groups will do anything about this --- even if the evidence is

shoved in their faces. The John Huizengas, William Happers, Richard Garwins, and Steve Koonins (Caltech) of this world wield enormous influence within government. They know a priori that cold fusion, and now the Papp engine, are nonsense. Therefore, it will fall to the private sector and to individual scientific researchers to deal with or not deal with the Papp engine enigma. We hope that this beginning of Infinite Energy's coverage of the Papp engine, and the science that may underlie it, will contribute to the search for scientific truth. Perhaps the Papp saga, and particularly Richard Feynman's negative role in it, will yet help to catalyze a long overdue review by mainstream science of what it thinks it knows and what it thinks it knows cannot be.