weight and was kept in motion by tread. As this manner of hanging was considered non-Catholic, in the seventeenth century bells were hung with the tongue down on most of these steeples. This reasoning is not convincing based on the amount of elaborate reconstruction, especially when it did not pertain to sound effect and the hanging was not visible. I decided to look into the reason for changing the way bells were hung (other than religious reasons) and I believe that energy is a possible reason.

I used a 1 meter tall marble hexagon weighing about 200 kg (like a steeple dummy) and I put it up to the energy zone. For lucidity I did not concretize its energy value and I marked it fundamentally. I placed a 1.5 kg bronze bell to the steeple dummy (tongue down) and after a short time its primary value increased nearly to treble. At the opposite placing (clapper up) the fundamental worth of steeple reduced around 20%. I repeated this test many times, always with the identical result. Therefore, it's clear that difficult reconstruction of steeples on churches was just an energetic matter.

Miroslav Provod

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Economic Depression or Deep Recession Likely

An economic depression or major recession is likely in America in the next few years. In 1989, I developed a theory about economic depressions arising from scientific revolutions in physics.[1] The theory assumes that there is a causal connection, and history shows this. The theory predicted several major events in industry and science that have occurred when predicted. This is offered as evidence that the theory has predictive ability. The theory predicts that a depressionary period is likely due to cessation of major new product introduction, historically high debt, automation, and the labor displacing effect of the formation of oligopolies. These economic features are now observed in the U.S. economy. Therefore, a depression or major recession is likely in the next few years.

The theory itself is based on some assumptions that seem to fit the historical evidence.[1] One assumption is that scientific revolutions in physics have happened at about 80 year intervals, and these scientific revolutions lead to industrial revolutions. Another assumption is that technological acceleration periods marked by productivity growth acceleration happen during which automation, high debt and other factors lead to depressionary circumstances. A third assumption is that the times of industrial revolutions are also depressionary times of low productivity growth and stiffer foreign competition, the closing of older paradigm industries and the transfer of labor and capital to emerging industries.

Overall, it is proposed that these assumptions explain the historically observed three major waves of productivity growth in the technologically leading economies since 1800 and the series of economic depressions or depressionary periods that have happened at about 40 to 50 year intervals since 1800 and the alternation between high productivity growth and low productivity growth economic depressions or recessions. These ideas were explained in manuscript articles written in 1989, 1990,[1] and 1991. Two articles about these ideas have recently been published in two physics conference proceedings and can be seen online.[2,3]

Thus far, evidence that this theory is true is that the major predictions of this theory have proved accurate in the areas of scientific development, industrial performance, and economic change. The theory was developed in 1989. The theory predicted productivity growth acceleration starting about 2000 and predicted that it would continue to increase during and after the depressionary period of the 2010s—just as productivity grew during the Great Depression period and the 20 year period afterwards. About 1997, there was a sudden jump—an acceleration—in labor productivity growth rates. From 1991-1996, nonfarm business productivity growth averaged only 1.0%, but around 1997 there was a discontinuity—a sudden jump in labor productivity growth rates. From 1996 to 2000, labor productivity growth averaged 2.8%. After 16 years of tepid growth, U.S. labor productivity growth accelerated in 1997 to about twice the previous pace and has averaged about 2.7% annually since then.

After 2000, for a few years, productivity growth rates slowly increased from the level of the late 1990s, but during the last two and a half years there has been a slowdown. If the prediction of this theory is correct, this is only a temporary dip that will now be followed by a compensating surge so that the general trend of increasing productivity will continue. This general surge in labor productivity is due to the switch in emphasis from product to process innovation in American industry, as is described in several articles.[2,3]

It was predicted that cold fusion is part of the scientific revolution that happened around 1985 (80 years after Einstein's earliest work in 1905).

In 1986, high-temperature superconductivity was reported, and in the middle to late 1980s, several groups independently published reports of nuclear reactions at low temperatures. Along with this experimental research, in the middle 1980s, the study of natural ball lightning progressed rapidly. Now, the field of cold fusion has become more accepted by scientists, with cold fusion meetings being held around the world and in American Physical Society and American Chemical Society meetings. Cold fusion articles have recently been published in *Naturewissenschaften*, the *Journal of Fusion Energy*, and other journals; "bubble fusion" articles were recently published in *Science* and other journals. The bubble fusion articles stimulated a lot of controversy, and the recent articles about nuclear reactions at low temperatures published in journals have thus far been mostly ignored by the news media. But it is clear now that the field of cold fusion, in which researchers study these and other experimental anomalies, has gained acceptance and become an established field of physics, challenging the older paradigm. The recent bubble fusion experiments have been replicated by several teams, and several kinds of cold fusion results have been replicated scores of times.

There is evidence of microscopic ball lightning in low energy nuclear reaction experiments as well. Theorists have tried to piece together a quantum mechanical explanation of cold fusion phenomena, but thus far only one overarching new theory has been proposed. It was introduced in 1992.[4]

It was predicted in 1989 that the various fields of research of physical anomalies—especially ball lightning, experimental and astronomical plasmoid, superconductivity, and cold fusion—were related and would merge together as a single field. This is happening. The 13th International Conference on Cold Fusion (ICCF13) was jointly sponsored with the Russian Ball Lightning Committee. In the recent confer-

ences, scientists have reported new experimental evidence of HTSC happening in an environment known to be conducive to low energy nuclear reactions. In the early 1990s, two groups (Lipson and Celani) independently reported experimental evidence of a connection between low energy nuclear reactions and high temperature superconductivity. This merging of the fields is happening because the anomalies themselves are related as the contradictions of basic QM and relativity theory postulates.

The theory predicted an economic boom time for the leading economy. The U.S. emerged as the technological leading economy. Productivity growth rates are nearing the previous record rates of the 1950s and 1960s. The productivity lead over the other large advanced countries has grown substantially during the past 10 years. But after September 11, there was a stock market dip. In 2007, the stock market reached record highs. Americans are also working record hours per week and the unemployment rate this decade has been lower than any decade since the 1960s. Many American states have record low unemployment. In November 2007, the unemployment rate in the U.S. was the lowest since 2001.

An economic boom has been going on for 25 years. Since August 1982, when it bottomed at 776, the Dow has risen almost 1,700%. That ascent reflects an economy that has nearly tripled from $5.2 trillion in 1982, adjusted for inflation, to $13.9 trillion today. The current six-year economic expansion dates from November 2001. There have only been two mild recessions in the last 25 years. This compares to the economy from 1957 to 1982 when the economy suffered six economic downturns for a total of 67 months. The 1973-75 and 1981-82 recessions were two of the worst in the twentieth century.[5]

Extremely high debt levels were predicted for the lead economy. This is evident. As happened in the late 1920s, the U.S. has record business and private debt as businesses struggle to survive as oligopolies formed in each industry and the survivors tried to gain market share. In 2005 and 2006 a record was set for mergers and acquisitions in the U.S. economy. Mergers and acquisitions are at the highest level since the Great Depression. Total corporate debt that has financed the corporate drive for market share and for corporate survival is the highest since the Great Depression. As in the late 1920s, job and wage growth is slow. Total American consumer debt reached $2.2 trillion in 2005, up from $1 trillion in 1994. And, 2005 was a record year for personal bankruptcies. Wage growth has been slow. In 2005, the personal savings rate in the U.S. went below zero for the first time since the Great Depression.

If any of these predictions hadn't turned out to be so accurate, it would have disproved this theory. But since these predictions from 1990 have proved so accurate, it seemed proper to warn people of a possible depression or deep recession in the near future. Even if the idea of an 80 year periodicity of revolutions seems untrue to you, if these trends continue of rising productivity due to the displacement of labor by

Contributions to the New Energy Foundation

(Received March - April 2008)

The New Energy Foundation, Inc., a 501(c)(3) charitable corporation, gratefully acknowledges the following generous contributions toward its work of (1) publishing worldwide via *Infinite Energy*, its website, and other media a broad spectrum of new energy science and technology, and (2) awarding grants for meritorious new energy research projects:

Anonymous • Rodney Conrad, Jr. • New York Community Trust • Brian Scanlan and Cynthia Chang • Sidney Kimmel Foundation

The Foundation has recently awarded grants to Dennis Letts, Andrei Lipson, and the organizing committee of ICCF14.

The New Energy Foundation (IRS EIN#42-1551677) is very much in need of greater financial support for its two-front program. We thank you for your kind support.

William Zebuhr, Chairman
New Energy Foundation Board of Directors

automation, oligopoly and efficiencies of scale, increasing business and consumer debt, and the satiation of consumer demand of the available types of products within the constraints of their budgets, what will the outcome be but a general decrease of consumption demand? There is no major new industry creating product being introduced, much unlike the 1980s and 1990s. Worker's incomes are rising much slower than their productivity.

Edward Lewis
Champaign, Illinois

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In Memoriam

Infinite Energy was saddened to learn of the passing of our longtime friend and supporter, Sir Arthur C. Clarke, on March 18. Clarke provided both financial and moral support to Gene Mallove, Jed Rothwell and Chris Tinsley when they founded *Infinite Energy* and Cold Fusion Technology in 1995, including donations to carry out experimental work.

Clarke was also generous of his time in 1998 when the film crew for our documentary "Cold Fusion: Fire from Water" visited him. He noted, "Like everyone else, I was very excited when the so-called 'cold fusion' announcement was made. And then, again like everybody else, I became disappointed and forgot about the whole thing when it seemed to be a mistake, though I was rather puzzled why two world-class scientists could have made such fools of themselves. Well, during the years that followed, slowly, from time to time, there came news of other laboratories repeating the experiment and getting positive results. And there has been a sort of groundswell, all over the whole world, of new information. And during the course of the last five years or so, I've slowly become convinced, from my original skepticism, to 99% certainty that it is for real. The evidence now is really overwhelming, and I do think this is a major scandal."

Clarke also noted the favorite of his "Clarke's Laws": 1) The only way of finding the limits of the possible is by going beyond them, into the impossible. 2) When a distinguished but elderly scientist states that something is possible, he is almost certainly right. When he states that something is impossible, he is very probably wrong. 3) Any sufficiently advanced technology is indistinguishable from magic.

His most extensive public comments about cold fusion appeared in the millennium edition of his book *Profiles of the Future*.

The cold fusion community, and the world, will miss Sir Arthur C. Clarke.

Errata

Please note the following corrections to the Issue 79 article "The Unpaved, Rutty Road to High-Temperature Superconductivity" by Dr. Gary Vezzoli (pp. 11-25):

On page 13, Vezzoli states, "At the Institute I met a meticulous German scientist named Claus Schwittl who had been a co-worker of Dr. Brian Josephson, and had assisted in the development and full explanation of what became known as the superconducting Josephson junction." Schwittl (properly spelled Klaus Schwidtal) was not a co-worker of Prof. Josephson (nor known by Josephson), though that is how he was introduced to Dr. Vezzoli. The scientist did not assist in any way with the development of the Josephson junction, but did later work pertaining to the Josephson junction and has published papers on the physics of the Josephson junction.

Sir Nevill Mott received the Nobel Prize in physics in 1977; the year was incorrectly cited as 1978 and Mott's first name misspelled (p. 14). Clarification is in order regarding the statement (p. 14) that Mott quoted the work of Vezzoli in his Nobel acceptance speech. Vezzoli is not directly referenced in the speech, but has subsequently noted, "The reference to my work in the Nobel acceptance speech address is in the form of the narrative—the material described—rather than a referenced citation. Mott explained this to me at the Harvard conference and in Edinburgh at another conference." Vezzoli shared many private communications with Mott before and after he received the Nobel Prize, and he feels that Mott included him in the appreciation (p. 412 of speech) "credit for the prize must certainly be shared with people with whom I've talked and corresponded all over the world." Mott's speech "Electrons in Glass" is available in full at http://nobelprize.org/nobel_prizes/physics/laureates/1977/mott-lecture.pdf.

On page 23, the date of the conference in the photo caption is incorrect. The conference was held in 1988, as indicated within the text.